Post-M&A Performance and Failure:

Implications of Time until Deal Completion

Ephraim Kwashie Thompson[*] *and Changki Kim*[**]

Abstract

Firm values change substantially between deal announcement and closing, risking renegotiation or termination. For deals that eventually close, does waiting longer to close benefit the acquirer post-M&A? We investigate whether the time that elapses until deal completion is an indicator of post-M&A performance and failure. We find that deals taking an optimum time to implement perform better, supporting the due diligence hypothesis, while taking too long to close is an indication of poor post-M&A performance and subsequent failure, supporting the overdue hypothesis.

Keywords: *M&A performance*, *M&A failure*, *time until deal completion*, *due diligence hypothesis*, *overdue hypothesis*

JEL Classification: *G34*, *G33*

[*] *Korea University Business School, 02841, 145, Anam-ro, Seongbuk-gu, Seoul, Republic of Korea. Email: kwatom002@korea.ac.kr*

[**] *Corresponding author: Professor, Korea University Business School, 02841, 145, Anam-ro, Seongbuk-gu, Seoul, Republic of Korea. Email: changki@korea.ac.kr*

1. Introduction

Most corporations experience constant changes in composition and structure. Mergers and acquisitions (M&A) remain a popular means of corporate restructuring. This fact has been proven courtesy a couple of decades of rigorous research on M&A. Research on M&A has reached a mature stage, yet the evidence on whether M&A are value-destroying or value-adding transactions remains inconclusive.

M&A research has traditionally focused on the macro-economic determinants affecting the level and performance of deal activity. The recent literature has however focused on the micro-level determinants (i.e., deal-level determinants) of merger activity and performance. One area of interest concerns the time it takes for a deal to close. The timeliness of a deal is very important because the firm values that drive interest in and the need for the deal could change substantially between the deal's announcement and its closing date. A long duration may lead to the need for renegotiation or termination, reducing the level of deal activity overall (Bhagwat, Dam, and Harford 2016). When deals take too long to close, it creates a completion risk (i.e., the deal may not close; (Afsharipour 2009). The high abandonment rates of announced M&A deals cited in the literature show that the time between deal announcement and completion is critical. Aside from the large number of M&A deals that are abandoned or suspended, the failure rates for deals completed and implemented possibly exceed 70% (Christensen et al. 2011).

Despite extensive rigorous research on M&A, few studies have examined the time taken to complete M&A deals after the deal agreement and announcement, the information implications this duration has regarding the deal process, and its consequences after the deal is completed. Only a few studies have attempted to explain the antecedents and determinants of the time it takes to close a deal. No study has examined whether the time taken to close a deal affects the acquirer post-merger.[1] The literature has

[1] The rising and prohibitive termination fees associated with the inability to close a deal may be an important reason why parties to a deal, especially the acquirer, may want to see a deal to the end even if it encountered problems during the negotiation process. (Butler and Sauska 2014) discuss termination fees related to deal abandonment.

largely ignored the time it takes until a deal closes as a determinant of performance and a risk indicator of failure probability. Studies have excluded the effect of the time it takes for a deal to close by restricting samples to an arbitrarily set time period.[2] However, arbitrarily setting the interval to one year or any other interval is not only subjective but can obscure important information implications of the time interval between deal announcement and deal closing. The question of what is the optimum time within which to close a deal is complex, since any number of deal antecedents and characteristics may affect the time required until a deal closes, such as the deal's complexity (Luypaert and De Maeseneire 2015); whether it is local or cross-border (Dikova, Sahib, and Van Witteloostuijn 2010); whether the target has a poor past performance and has a bankruptcy flag on the deal (Moeller and Carapeto 2012; Carapeto, Moeller, and Faelten 2009); whether the acquirer's stocks are overvalued (Ang and Cheng 2006); whether the deal is occurring during a financial crisis (Sánchez, Seeber, and Goldberg 2011); and what type of deal advisors are involved (Hunter and Jagtiani 2003).

We propose and test two complementary hypotheses[3]—the due diligence hypothesis and the overdue hypothesis—to examine whether the time taken until deal completion is an indication predicting the performance and survival of a deal post-completion. The due diligence hypothesis posits that a deal may take a long time to complete after its announcement because the acquirer has undertaken rigorous due diligence to ensure a proper close. This due diligence process provides acquiring firms with a more informed assessment of the expected costs, benefits, and risks of an acquisition and grants them the opportunity to renegotiate or terminate bad deals (Wangerin 2017)[4]. If the due diligence hypothesis holds,

[2] Papers that take such an approach include (Furfine and Rosen 2011) and (Koerniadi, Krishnamurti, and Tourani-Rad 2015).

[3] Chahine, Hasan and Mazboudi (2018) report that according to Mergermarket Group, about 64% of respondents prefer to complete M&A deals quickly to capture synergies early, and 36% prefer expanding the due diligence timeline.

[4] The focus of our research is on transactional due diligence conducted by the acquirer after the deal announcement as opposed to preliminary due diligence or due diligence review conducted before the

then the deal should experience higher gains and be associated with a higher likelihood of survival post-M&A, while deals for which due diligence is not undertaken should be associated with lower performance outcomes and increased failure likelihood. On the other hand, the overdue hypothesis posits that a deal may be delayed or abandoned if it faces huge challenges to successful completion and implementation. In such a situation, the deal is delayed not necessarily because due diligence is being undertaken but because of possible challenges to the deal itself; even if the deal is completed, we expect a higher possibility of poor performance and subsequent deal failure. Our findings support both of our hypotheses, as we confirm an inverse U-shaped relationship between time until deal completion and post-M&A performance and a U-shaped relationship between time until deal completion and post-M&A failure.

Wangerin (2017) shows that less due diligence is associated with lower post-merger profitability and indicates a monotonic relationship between due diligence and profitability. We show further in addition to his findings that beyond an optimal deal closing time, the acquirer also suffers low post-merger profitability indicating the presence of a non-monotonic relationship. Further, our study takes on the further challenge of using various time intervals from the short term to the long term (ie. the immediate one month after the deal close till five years after completion) and in addition uses additional measures of profitability not limited to Wangerin's single measure. We also show that there is a non-monotonic relationship between the time till deal closing and the likelihood of failure. To control for the endogeneity of time till deal completion, we employ an instrumental variable regression to provide further support for our findings.

To the best of our knowledge, this study is the first to test time until deal completion as a determinant of M&A performance and subsequent survival. We help explain why some M&A fail, in contrast to the large body of literature suggesting that M&A are a useful way to increase shareholder value and improve the performance of underperforming targets. We also suggest that time until deal completion

announcement. To the extent that the acquirer has signed a deal agreement with the target and announces it to the public, we believe the acquirer would have conducted enough preliminary due diligence to satisfy itself of the validity of the deal and that further transactional due diligence is only undertaken by the acquirer for incremental benefits to the deals, ceteris paribus.

could proxy for a varied array of risk factors influencing survival post-M&A. In a market where information is typically kept out of the public eye during the negotiation process, the time taken until deal completion is likely to be a very important source of information for investors, risk managers, and regulators.

The rest of the paper is structured as follows. Section 2 reviews the literature on M&A and develops the study's hypotheses. Section 3 describes the data, explains how they were collected, and introduces the study's research methodologies. Section 4 presents and describes the results. Finally, Section 5 concludes the paper.

2. Literature Review and Hypothesis Development

Rigorous research over the past decade has investigated the determinants of M&A performance and failure. One of the major purposes of M&A is to take advantage of the synergies created by joining the two entities, and these synergies are time-bound. Thus, as the literature has stressed, the deals need to be closed in a timely fashion (Chahine, Hasan, and Mazboudi 2018). In addition, because executives can engage in adverse behavior while undertaking large acquisitions, many shareholders pressure managers to close their deals quickly (Eckbo 2008). When deals close too quickly and without due diligence, they lead to concerns about their performance and survival. However, due diligence requires time and a large investment of resources: It is costly. Nevertheless, the research has shown that more due diligence is undertaken by acquirers when the benefits expected from undertaking such due diligence exceed the expected costs and when it would lead to a better deal. Furthermore, the M&A market is opaque, and its negotiations are conducted behind closed doors, so that the public cannot easily ascertain what is happening. The major events most visible to the market are announcements of deals and of their consummation or abandonment. Given the information asymmetry between the parties to a deal and the market and the expectation that a successful deal should close within an optimal period, the time a deal takes to close could be a valuable source of information and serve as a signal to the market about whether the deal is potentially value-creating or faces significant challenges, thus indicating its expected performance and survival. In this context, two complementary hypotheses related to the time until completion are proposed below.

A. Due Diligence Hypothesis

Effective due diligence is taken by the acquirer to satisfy itself of the validity of the representation and warranties made by the target in the deal provisions. Wangerin (2017) indicates that due diligence enables the acquirer to verify that no "material adverse event" has occurred that would be detrimental to the value of the target firm. He further shows that less due diligence is associated with lower post-merger profitability. In a rushed deal, detailed provisions critical to its success might be overlooked or ignored, the targets may conceal earnings management (Easterwood 1998), or the acquirers may hide opportunistic activities such as inflated earnings (Louis and Sun 2016). As rushed deals have potential negative consequences, the literature has stressed the need for effective due diligence for deal success.

Therefore, adequate due diligence should ensure increasing returns to the acquirer post-M&A. We assume in proposing this hypothesis that, in line with prior findings, the acquirer will conduct due diligence on condition that the expected benefits from the additional effort are greater than the associated costs, including the direct cost of the due diligence process itself and the indirect cost of losing timeliness through a delayed close. If these assumptions are correct, a deal's post-M&A performance should increase and its post-M&A likelihood of failure decrease as time until deal completion increases due to the benefits accruing from the additional due diligence efforts. This would indicate an increasing or positive relationship between time until deal completion and subsequent deal performance and a negative relationship between the former and the likelihood of failure post-M&A. We thus propose the following:

HYPOTHESIS 1: If the due diligence hypothesis holds, there is a positive relationship between time until deal completion and subsequent deal performance post-M&A, ceteris paribus.

HYPOTHESIS 2: If the due diligence hypothesis holds, there is a negative relationship between time until deal completion and the likelihood of deal failure post-M&A, ceteris paribus.

B. Overdue Hypothesis

As M&A are complex, sufficient time and resources must be committed to ensure the expected outcome. Differing from deal to deal, this sufficiency is defined as the optimal time required for the deal to close and for optimal due diligence by the acquirer. However, if a deal takes a longer-than-optimum time to implement, the loss of timeliness and expected deal synergies would reduce performance and increase the risk of failure. The literature lists a number of reasons why a deal may be delayed, including conflicting interests among the parties during negotiations; government influence via antitrust laws; and the opposition of stakeholders such as shareholders, employees, and interested social groups. Thus, when a deal takes longer than its optimum interval to close, even if the delaying factors are not revealed to the market, the delay may indicate challenges, problems, or opposition to the deal. We hypothesize that this delay will reduce subsequent performance after the deal closes because of the risk that the fundamentals of the target may change substantially from what was envisaged (Bhagwat, Dam, and Harford 2016) and the risk that an untimely implementation will subtract from the deal the beneficial synergies of integration, such as technological advancements and tax credit consolidation. This suggests a negatively sloped relationship between time until deal completion and subsequent performance if a deal is delayed beyond the optimal closing time and a positively sloped relationship with the subsequent likelihood of failure: As time until deal completion approaches its optimum, subsequent performance increases until it reaches a maximum at the optimum and decreases as the deal is delayed further beyond the optimum time; the opposite dynamic obtains concerning the likelihood of failure. We thus propose the following:

HYPOTHESIS 3: If the overdue hypothesis holds, there is a negative relationship between time until deal completion and subsequent deal performance post-M&A beyond its optimum closing time, ceteris paribus.
HYPOTHESIS 4: If the overdue hypothesis holds, there is a positive relationship between time until deal completion and the likelihood of deal failure post-M&A beyond its optimum closing time, ceteris paribus.

The due diligence and overdue hypotheses are complementary rather than competing. Thus, there

is an inverse U-shaped relationship between time until deal completion and post-M&A performance and a U-shaped relationship between time until deal completion and the post-M&A likelihood of failure. We test hypotheses 1 and 3 and hypotheses 2 and 4 together with a quadratic term in our regressions.

3. Data

A. Sample Selection

Data for this study are obtained from a wide variety of sources. Data on international M&A from 2000 to 2010 between US firms as acquirers and firms in other countries as targets are taken from the Thompson Reuters Securities Data Company (SDC) Platinum Mergers and Acquisitions database. Since we use data from the anti-director index developed by Djankov et al. (2008), the target countries comprise the 73 countries examined in their study. We also collect data on local US M&A from the SDC M&A database. We include only completed deals and exclude deals involving governments or their agencies as well as unknown deals. The sample includes both public and private targets. Data on the following deal characteristics were obtained: date announced, date effective, percentage of ownership, value of transaction, target and acquirer SIC codes, form of deal compensation (percentage of stock or percentage of cash), the attitude of the deal (whether friendly or hostile), and the number of target and acquirer advisors.

The following control variables are used. At the deal level, we control for performance and survival effects related to payment method using a dummy variable that equals one if the deal is majority financed by cash and zero otherwise. (Berkovitch and Narayanan 1990) have shown that cash-financed deals can be accomplished quickly without delays, thus posing less risk to the deal; the opposite is true when the deal is financed with stock or a mixture of securities. The ownership percentage determines whether the acquirer can control the target. If the acquirer does not have majority control, the inefficiencies currently causing poor target performance are highly likely to continue, as there is no definite change in ownership to affect performance or survival probability (Jensen and Ruback 1983). Research has shown that M&A between

firms in unrelated industries are usually associated with poor performance (Healy, Palepu, and Ruback 1992) because such mergers rarely benefit from the advantages generated by sharing resources, having experience in the same industry, and enjoying an easy availability of human resources, among others.

With respect to country-level controls, weaker shareholder protection poses a risk to the performance and survival of an M&A deal because of the high costs of expropriation and lower stock development, creating friction in the raising of external equity (Rossi and Volpin 2004). (Bebchuk 1999) shows how low shareholder protection negatively affects corporations and shareholders. We control for shareholder protection using the anti-director rights index of Djankov et al. (2008). The finance literature has shown that cultural differences between countries can affect business dealings between them (Ahern, Daminelli, and Fracassi 2015; Stulz and Williamson 2003). We thus control for how differences between the advisor and target countries' cultures in terms of language and religion can affect the M&A deal. Countries' locations and the distance between them influence their culture, weather conditions, and the ease with which business can be conducted between them. There are benefits to geographical diversification in the form of increased markets, exposure to different economic conditions, and the opportunity to learn new skills and obtain new resources and technology. However, it has been empirically shown that differences in geographical location between the acquirer and target can affect M&A deals (Uysal, Kedia, and Panchapagesan 2008). We control for these differences using a geographical dummy. We thus use GDP growth and total stock market development growth to control for other possible country and capital market effects.

B. Testing for U-shaped and Inverted U-shaped Relationship and Optimal Turning Point

In recent years, much attention has been paid to the consequences of spurious quadratic relationships concluded merely based on the significance and magnitude of the unsquared and squared terms in a model. Consequently, more stringent tests for verifying the robustness of findings of quadratic relations have been developed and applied in the literature. We use the rigorous test of (Lind and Mehlum 2010) to test the U-shaped and inverse U-shaped relationships we have hypothesized. An inverse U-shaped

quadratic relationship requires a positive slope at the start and a negative slope at the end of the interval and vice versa. We set the minimum and maximum values to the observed values in our sample. We set a quadratic relation of the form

$$\mathrm{y} = \alpha + \beta_1 tc + \beta_2 tc^2 + \gamma' \mathrm{z} + \varepsilon \quad \text{(I)}$$

where tc is the explanatory variable time until deal completion, y is the variable to be explained (i.e., CAR, BHAR, $\Delta TURNOVER$, and ΔROA as defined in the Appendix), ε is the error term, and z is the set of control variables (also defined in the Appendix).

Suppose σ_{11} is the estimated variance of $\hat{\beta}_1$, σ_{22} is the estimated variance of $2\hat{\beta}_2$, and σ_{12} is the estimated covariance of $\hat{\beta}_1$ and $2\hat{\beta}_2$, where $\hat{\beta}_1$ and $\hat{\beta}_2$ are the estimators of β_1 and β_2, respectively. The null and alternative hypotheses for testing an inverse U-relationship are

$$H_0: \beta_1 + 2\beta_2 tc_{min} \leq 0, \quad H_0: \beta_1 + 2\beta_2 tc_{max} \geq 0 \quad \text{(II)}$$

$$H_a: \beta_1 + 2\beta_2 tc_{min} > 0 > \beta_1 + 2\beta_2 tc_{max} \quad \text{(III)}$$

where tc_{min} is the minimum time to close the deal and tc_{max} is the maximum time to close the deal in our sample. The corresponding t-statistic is

$$t_j = \frac{\hat{\beta}_1 + 2\hat{\beta}_2 (tc_j)}{\sqrt{\sigma_{11} + 2\sigma_{12} + \sigma_{22} (tc_j)^2}}, \mathrm{j} = \min \text{ or } \max, \quad \text{(IV)}$$

In addition, from the quadratic relation defined above, it follows with a simple differentiation that the optimal time for closing the deal should occur at the time where

$$\beta_1 + 2\beta_2 tc = 0 \quad \text{(V)}$$

Put differently, this occurs at the turning point; the point where the average marginal effect equals zero.

C. Measuring Stock Performance

We use the standard event study measure to evaluate the firm's stock performance after the close of the deal. We use the cumulative abnormal return as the measure during the short-horizon study and the buy-and-hold abnormal return during the long-horizon study. The cumulative abnormal return of the acquirer is computed as

$$\mathrm{CAR}_i = \sum_{t=1}^{T}(\mathrm{R}_{it} - \mathrm{E}(\mathrm{R}_{it})) \quad \text{(VI)}$$

where R_{it} is the return of the acquirer, and $\mathrm{E}(\mathrm{R}_{it})$ is the expected return of the acquirer computed based on the mean-adjusted model,[5] market model,[6] three-factor model of Fama and French (1993),[7] and four-factor model of (Carhart 1997).[8] The buy-and-hold abnormal returns of the acquirer are computed as

$$\mathrm{BHAR}_i = \prod_{t=1}^{T}(1 + \mathrm{R}_{it}) - \prod_{t=1}^{T}(1 + \mathrm{E}(\mathrm{R}_{mt})) \quad \text{(VII)}$$

where R_{it} is the return of the acquirer and $\mathrm{E}(\mathrm{R}_{mt})$ is the expected return of the market portfolio.

D. Sample Summary and Description

We summarize and describe the sample in Table 1. Our sample consists of 5,925 firm-year observations and 2,689 firms. The highest number of observations occur in 2000, and the next highest number occur in 2006. This is consistent with the observation in the literature that M&A activity rose through the early 2000s until the onset of the financial crisis in 2007. In terms of continental classification, most of the deals occur in the Americas (probably influenced by the large number of observations of local

[5] The value-weighted return of all CRSP firms incorporated in the US and listed on the NYSE, AMEX, or NASDAQCRSP stock is used as a proxy for the market return.

[6] The market model is estimated as $\mathrm{R}_{it} = \alpha_i + \beta_i R_{mt} + \mathcal{E}_{it}$, with R_{it} being the return of the acquirer in the estimation window and R_{mt} the corresponding value-weighted return of all CRSP firms and $\mathrm{E}[\mathcal{E}_{it}] = 0$.

[7] The three-factor model is estimated as $(\mathrm{R}_{it} - \mathrm{r}_{ft}) = \alpha_i + \beta_{i,m}(R_{mt} - \mathrm{r}_{ft}) + \beta_{i,smb}SMB_t + \beta_{i,hml}HML_t) + \mathcal{E}_{it}$, with $\mathrm{E}[\mathcal{E}_{it}] = 0$, where R_{it} is the return of the acquirer in the estimation window, r_{ft} is the risk-free rate, R_{mt} is the corresponding value-weighted return of all CRSP firms, SMB_t is the excess return of small over big stocks measured by market capitalization, HML_t is the excess return of high market-to-book ratio stocks over low market-to-book ratio stocks.

[8] The four-factor model is estimated as $(\mathrm{R}_{it} - \mathrm{r}_{ft}) = \alpha_i + \beta_{i,m}(R_{mt} - \mathrm{r}_{ft}) + \beta_{i,smb}SMB_t + \beta_{i,hml}HML_t) + \beta_{i,mom}MOM_t) + \mathcal{E}_{it}$, with $\mathrm{E}[\mathcal{E}_{it}] = 0$, where R_{it} is the return of the acquirer in the estimation window, r_{ft} is the risk-free rate, R_{mt} is the corresponding value-weighted return of all CRSP firms, SMB_t is the excess return of small over big stocks measured by market capitalization, HML_t is the excess return of high market-to-book ratio stocks over low market-to-book ratio stocks, MOM_t is the excess of past winning stocks over past losing stock (also referred to as the "momentum factor").

US M&A in our sample), and the next highest number occur in Europe. The highest number of international deals occur between the US and Canada and between the US and the United Kingdom, reinforcing the finding of other studies that more M&A occur between countries that are geographically close or that have a large volume of bilateral trade.

Table 1: Summary and Descriptive Statistics

Panel A: Deal Summary by year, continent, and type

Year of Completion	Frequency	Percent
2000	630	10.63
2001	572	9.65
2002	577	9.74
2003	530	8.95
2004	577	9.74
2005	574	9.69
2006	596	10.06
2007	581	9.81
2008	481	8.12
2009	348	5.87
2010	403	6.8
2011	51	0.86
2012	2	0.03
2013	2	0.03
2014	1	0.02
Total	5,925	100

Continent	Frequency	Percent
Africa	9	0.15
America	5,103	86.13
Asia	157	2.65
Europe	594	10.03
Oceania	62	1.05
Total	5,925	100

Type	Frequency	Percent
US local	4,827	81.47
International	1,098	18.53
Total	5,925	100

Panel B: Descriptive Statistics

Variable	N	mean	std dev	min	max
Time until completion (months)	5925	1.77	3.035	0	66.267
GDP growth	5925	2.23	1.997	-10.894	15.24
Total stock growth	5925	0.134	0.465	-1	14.495
Value of transaction	5925	3.669	1.932	-5.116	11.194
Ownership percentage	5925	98.527	7.83	11	100
Size	5925	6.563	1.917	0.474	13.59
Cash	5925	0.117	0.129	0	0.949
Debt	5925	0.478	0.238	0.005	2.775
Tobin's Q	5925	1.949	1.444	0.22	35.099
Shareholder protection	5925	0.642	0.112	0.092	1
Number of acquirer advisors	1835	1.189	0.542	1	9
Number of target advisors	2425	1.16	0.451	1	5

Panel B of Table 1 shows that the mean time it takes to complete a deal is about two months, and the longest duration in our sample is sixty-six months (corresponding to about five years and six months).

The shortest time is zero, which represent deals that are completed on the same day they are announced.[9] Another variable of interest is the ownership percentage; the mean is about 98.53%. This ownership level indicates that the acquirer has obtained enough ownership in the target to control it completely and that the performance of the target can have a material effect on the acquirer post-M&A.

The correlation table shown in Panel D indicates that the pairwise correlation between the variables in our sample is substantially low. The highest correlation is between the language dummy and the geographical dummy. This is not a cause for concern. The mean variance inflation function of our variables is 2.09, far below the rule-of-thumb of 10 used in many studies. Therefore, our study has no multicollinearity issues. In addition, the Breusch–Pagan/Cook–Weisberg test and the White test for heteroscedasticity with a null of constant variance are rejected, indicating possible heteroscedasticity in our models. We thus use heteroscedasticity-robust standard errors. We also correct for possible clustering at the firm and year levels. The mean level of Tobin's Q is 1.95, indicating that the acquiring firms in the sample are overvalued on average. The acquirers' mean debt-to-asset ratio is also 0.48; it can thus be inferred that most of the acquirers are not saddled by significant debt; their assets can cover twice their level of debt in their portfolios on average.

Figure 1 reports the cumulative abnormal returns of the acquirer after the deal closes and becomes effective. Specifically, we report the CAR for two days before and two days after the effective date as well as for 10 days before and 10 days after it. We employ various approaches to measure the expected returns, such as using the mean-adjusted return, market-model, Fama–French three-factor model, and Carhart four-factor model. Aside from the mean-adjusted model, which shows higher levels of cumulative abnormal returns of about 0.92% for the (-2,2) day interval, very little difference is seen when using the other three approaches; they show about 0.45% cumulative abnormal returns for the same interval. The models all

[9] Note that this does not imply that the acquirer did not undertake any due diligence at all as the acquirer could have already undertaken some preliminary due diligence or due diligence review before the deal announcement, howbeit our focus is on transactional due diligence conducted after the deal announcement.

show similar abnormal return trends. The acquirer experiences increasing returns around the day the deal closes, and then they begin to decrease. The increase in returns beyond what is expected for the acquirer when the deal closes indicates a positive reaction from the market that the deal has closed successfully, allaying uncertainties regarding whether the deal would be abandoned. This result is a confirmation of prior findings in the literature of a positive reaction associated with a successful close (Savor and Lu 2009).

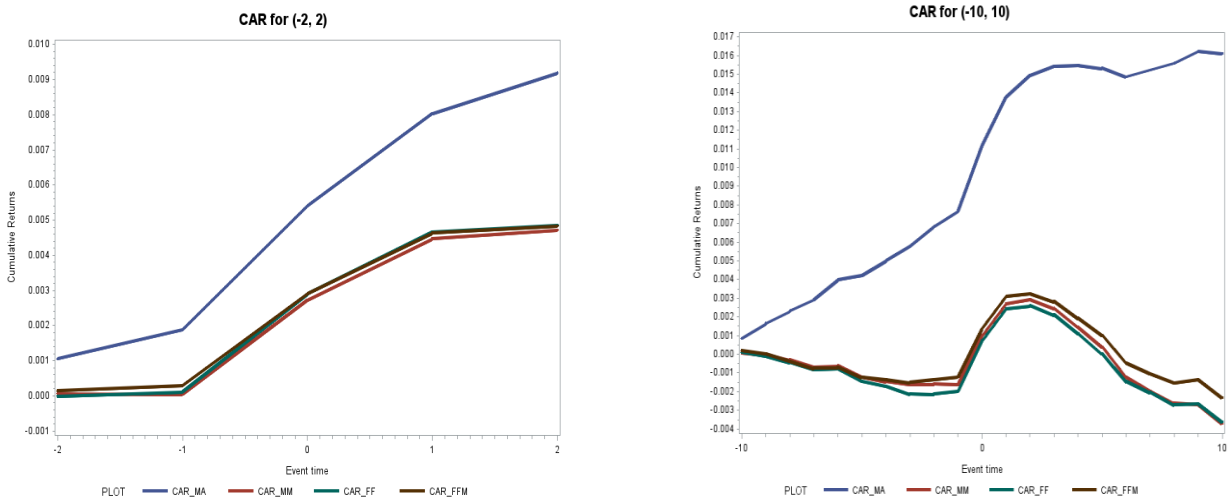


Figure 1: Cumulative abnormal returns of acquirer (-2,2) and (-10,10) using the mean-adjusted model, market-model, Fama–French three-factor model and Carhart four-factor model.

Table 1
Panel C: Deal Summary by Target Nation

Target Nation	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Argentina	3	1	1	0	2	0	1	0	0	0	1	0	1	0	0	10
Australia	5	4	5	2	9	2	3	7	6	6	5	0	0	0	0	54
Austria	0	0	0	0	0	1	0	2	0	0	0	1	0	0	0	4
Belgium	2	3	1	0	1	4	2	0	3	2	0	0	0	0	0	18
Brazil	0	1	1	1	1	3	2	1	3	3	2	0	0	0	0	18
Bulgaria	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Canada	17	28	22	12	20	16	19	29	17	11	21	1	0	1	0	214
Chile	0	0	1	0	0	1	0	0	1	3	0	0	0	0	0	6
China	1	2	3	4	2	4	5	6	5	3	5	0	0	0	0	40
Colombia	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	3
Croatia	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Czech Republic	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	4
Denmark	2	1	2	0	0	1	1	1	1	0	2	1	0	0	0	12
Finland	2	0	2	0	3	1	0	1	1	0	0	0	0	0	0	10
France	5	10	3	6	6	7	6	5	7	1	5	1	0	0	0	62
Germany	6	7	13	9	15	11	13	10	6	4	3	2	0	0	0	99
Ghana	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Hong Kong	0	0	1	0	1	1	3	1	0	0	0	0	0	0	0	7
Hungary	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	3
Iceland	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
India	1	0	0	2	1	0	2	2	0	3	5	0	0	0	0	16
Indonesia	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	4
Ireland-Rep	2	0	2	1	2	0	3	1	1	1	1	0	0	0	0	14
Israel	3	0	0	0	2	3	2	3	2	2	1	0	0	0	0	18
Italy	2	0	3	2	0	3	3	1	3	2	3	0	0	0	0	22
Japan	3	3	2	2	1	0	1	1	1	0	1	0	0	0	0	15
Kazakhstan	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lithuania	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Luxembourg	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3
Malaysia	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Mexico	3	2	5	0	2	1	1	4	2	0	1	1	0	0	0	22
Morocco	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Netherlands	2	7	1	7	2	3	7	4	4	1	2	1	0	0	0	41
New Zealand	0	0	0	0	2	1	1	1	1	1	1	0	0	0	0	8
Norway	2	2	2	0	1	0	1	2	2	1	2	1	0	0	0	16
Philippines	0	1	0	0	0	2	0	1	2	0	0	0	0	0	0	6
Poland	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
Portugal	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	3
Romania	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Russian Fed	1	0	0	0	0	2	1	1	2	1	0	0	0	0	0	8
Singapore	0	0	1	1	0	1	0	0	0	2	1	0	0	0	0	6
South Africa	2	0	0	2	0	1	0	0	0	1	0	1	0	0	0	7
South Korea	1	1	0	1	1	1	2	0	1	1	2	0	0	0	0	11
Spain	0	2	2	0	2	2	3	1	2	0	2	0	0	0	0	16
Sweden	3	4	0	0	4	2	5	3	1	2	2	1	0	0	0	27
Switzerland	1	2	1	1	3	1	4	3	1	1	6	0	0	0	0	24
Taiwan	2	1	0	1	4	3	4	2	1	2	0	0	0	0	0	20
Thailand	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	3
Turkey	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
United Kingdom	24	16	26	20	24	24	16	20	13	8	16	1	0	0	0	208
United States	531	472	474	453	461	464	481	463	390	284	312	39	1	1	1	4,827
Uruguay	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Venezuela	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	**630**	**572**	**577**	**530**	**577**	**574**	**596**	**581**	**481**	**348**	**403**	**51**	**2**	**2**	**1**	**5,925**

Table 1

Panel D: Correlation Table

The table shows the pairwise correlation between the dependent, independent, and control variables used in this study. Tc is the time until deal completion, cp is the dummy for majority cash payment for deal, di is the dummy for difference in industry between acquirer and target, sp is the anti-director rights index of Djankov et al. (2008) proxying for shareholder protection, la is the difference in language between the acquirer and target proxying for cultural differences between the parties to the deal, gr is the geographical dummy for whether the acquirer and target belong to the same continent, gdp is the gross domestic product of the target country, tsg is the total stock growth of the target country, vt is the value of the M&A transaction, op is the ownership percentage of the acquirer after the deal closes, lat is the log of total assets to control for size, chat is the cash flow scaled by total assets to control for cash flow, ltat is the long-term debt scaled by total assets to control for leverage, and tq is the Tobin's q to control for valuation effects related to the deal.

	tc	**cp**	**di**	**sp**	**la**	**gr**	**gdp**	**tsg**	**vt**	**op**	**lat**	**chat**	**ltat**	**tq**
tc	1													
cp	-0.0732*	1												
di	-0.023	-0.0186	1											
sp	-0.0338*	0.0336*	0.0124	1										
la	0.0362*	-0.0436*	0.011	-0.6807*	1									
gr	-0.0017	-0.0346*	0.0255*	-0.1629*	0.7292*	1								
gdp	0	-0.0275*	-0.0043	0.0495*	0.1488*	0.1494*	1							
tsg	-0.016	0.0075	0.0135	-0.0429*	0.0976*	0.0819*	0.4169*	1						
vt	0.3164*	0.0727*	-0.0552*	-0.0276*	-0.0036	-0.0151	-0.0194	0.0223	1					
op	-0.0382*	0.0497*	-0.0292*	0.0673*	-0.1516*	-0.0988*	-0.0573*	-0.0559*	0.0326*	1				
lat	0.2205*	0.0701*	-0.0035	-0.0510*	0.0912*	0.0763*	-0.0348*	-0.0023	0.6520*	-0.0354*	1			
chat	-0.1039*	-0.0232	-0.0154	0.009	0.0213	0.0318*	-0.0161	-0.0328*	-0.2295*	0.0302*	-0.3039*	1		
ltat	0.1411*	-0.003	-0.0029	-0.0241	0.0258*	0.005	-0.0063	-0.0011	0.1861*	-0.0256*	0.2921*	-0.3595*	1	
tq	-0.0603*	-0.0368*	-0.012	-0.0147	0.0345*	0.0352*	0.0894*	0.0355*	-0.0552*	0.0106	-0.0753*	0.2701*	-0.1640*	1

4. Results and Discussion

To investigate how the time until completion affects the acquirer post-M&A, we study several quantitative indicators, including stock performance, financial performance, and operational performance. We also investigate how time until deal completion affects the likelihood of failure, and then conduct a survival analysis.

A. Stock Performance

Table 2 presents the results of our tests for the due diligence and overdue hypotheses using stock performance. For the short-term analysis, we use cumulative abnormal return (CAR) to measure the stock performance of the acquirer one month and three months after the deal, as in equation (VIII). Due to the misspecification bias related to using CAR to measure long-horizon returns, we adopt the buy-and-hold abnormal returns (BHAR) to measure stock performance six months, one year, two years, and three years after the deal (Kothari and Warner 2007), as in equation (IX)[10]. To estimate the expected returns, we use the constant mean-adjusted model for all subsequent regressions after confirming that our results do not substantially differ across the different measurement approaches outlined above. We run a panel regression using a squared term of time until completion to test the inverse U-shaped relationship between stock performance and time until deal completion:

$$CAR_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + \mu_i + \varepsilon_{it} \quad \text{(VIII)}$$

$$BHAR_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + \mu_i + \varepsilon_{it} \quad \text{(IX)}$$

[10] In this study, we focus on the post-merger CAR and BHAR because the acquirer was independent of the target at the announcement date. The deal is effective only after the deal closes or is consummated.

where CAR is the cumulative abnormal returns of the acquirer or newly merged firm, tc is the time until deal completion, tc^2 is the squared term of time until deal completion, μ_i are firm fixed effects used to control for time-invariant heterogeneity among firms, and ε is the error term. The control variables are the national- and firm-level and deal-specific variables, as explained above. We correct the standard error terms for heteroscedasticity and cluster the standard errors by firm and year to address issues related to serial correlation in firm clusters.

Table 2: Effect of Time until Completion on Stock Performance

This table investigates the effect of time until completion on acquirer stock performance post-M&A at various time intervals. For the one-month and three-month time intervals, the cumulative abnormal return is used as the dependent variable; for the six-month, one-year, two-year, and three-year intervals, buy-and-hold abnormal returns are used as the dependent variable. All variables are defined in Appendix A. Firm fixed effects are included in all models, and the Wald tests to verify that the quadratic terms in the models are equal to zero are reported. In addition, the turning point of the quadratic relationship between time until deal completion and the dependent variable is reported as well as the result and implication of the stringent test of quadratic relation, following Lind and Mehlum (2010). Standard errors are corrected for heteroscedasticity and clustered by firm and year.

Model: $CAR_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Model: $BHAR_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Dependent Variable: CAR/BHAR	**(1) 1 MONTH**	**(2) 3 MONTHS**	**(3) 6 MONTHS**	**(4) 1 YEAR**	**(5) 2 YEARS**	**(6) 3 YEARS**
Time	0.0023*	0.0071**	0.0077**	0.0131*	0.0217**	0.0308**
	(0.082)	(0.012)	(0.034)	(0.087)	(0.034)	(0.019)
Time_sq	-0.0001***	-0.0002***	-0.0002**	-0.0002*	-0.0006**	-0.0006***
	(0.008)	(0.001)	(0.011)	(0.078)	(0.029)	(0.003)
Cash payment	0.0070*	0.0080	0.0242*	0.0304	0.0241	0.0227
	(0.059)	(0.290)	(0.098)	(0.110)	(0.439)	(0.567)
Industry difference	-0.0067	-0.0113	-0.0327***	-0.0440*	-0.0430*	-0.0413
	(0.336)	(0.181)	(0.005)	(0.067)	(0.076)	(0.120)
Shareholder protection	0.0921***	0.0731	0.2083*	0.5465*	0.3725*	0.4425
	(0.001)	(0.235)	(0.050)	(0.094)	(0.060)	(0.126)
Language difference	0.0344**	0.0309	0.1165*	0.2824	0.1211	0.1899
	(0.032)	(0.350)	(0.063)	(0.101)	(0.299)	(0.334)
Geographical difference	-0.0066	0.0009	-0.0415	-0.1181*	-0.0274	-0.0428

	(0.521)	(0.962)	(0.182)	(0.083)	(0.601)	(0.622)
GDP growth	-0.0026	-0.0056*	-0.0096**	-0.0071	-0.0118	-0.0063
	(0.105)	(0.071)	(0.037)	(0.505)	(0.189)	(0.575)
Total stock growth	-0.0070	-0.0013	-0.0039	-0.0151	-0.0108	-0.0280
	(0.307)	(0.853)	(0.746)	(0.378)	(0.622)	(0.390)
Ownership percentage	0.0003	0.0001	-0.0003	-0.0046	0.0008	0.0033***
	(0.394)	(0.824)	(0.644)	(0.122)	(0.459)	(0.003)
Value of transaction	-0.0015	-0.0079**	-0.0133***	-0.0210**	-0.0271**	-0.0447***
	(0.374)	(0.023)	(0.009)	(0.027)	(0.022)	(0.008)
Size	-0.0146*	-0.0321**	-0.0913***	-0.2456***	-0.5374***	-0.7691***
	(0.056)	(0.018)	(0.000)	(0.000)	(0.000)	(0.000)
Cash flow	0.0863***	0.1653***	0.2316**	0.2939*	0.0693	0.1322
	(0.001)	(0.004)	(0.027)	(0.068)	(0.785)	(0.751)
Debt	0.0159	0.0300	0.2137***	0.3708***	0.8064***	1.3637***
	(0.582)	(0.515)	(0.002)	(0.004)	(0.000)	(0.000)
Tobin's Q	0.0166***	0.0316***	0.0429***	0.0032	-0.0916***	-0.1487***
	(0.000)	(0.000)	(0.000)	(0.842)	(0.000)	(0.000)
Constant	-0.0251	0.1010	0.3456**	1.5970***	3.2025***	4.4515***
	(0.686)	(0.357)	(0.032)	(0.000)	(0.000)	(0.000)
Firm fixed effect	Y	Y	Y	Y	Y	Y
Observations	5,921	5,914	5,888	5,747	5,322	4,928
R-squared	0.030	0.042	0.064	0.083	0.143	0.145
Number of firms	2,689	2,686	2,671	2,598	2,376	2,180
Extremum of time until completion(days)	455	477	664	801	543	816
Wald test:						
Time_sq=0	Rejected	Rejected	Rejected	Marginal	Rejected	Rejected
Utest Null	Monotone/U	Monotone/U	Monotone/U	Monotone/U	Monotone/U	Monotone/U
Utest (P-value)	0.046	0.0006	0.0166	0.0819	0.00661	0.00588
Utest-implication	Strong Inverse-U	Strong Inverse-U	Strong Inverse-U	Weak Inverse-U	Strong Inverse-U	Strong Inverse-U

*P-value is in parentheses. *** p < 0.01, **p < 0.05, *p < 0.1. Rejection of the Wald test at p < 0.05, while its marginal rejection is at p < 0.1.*

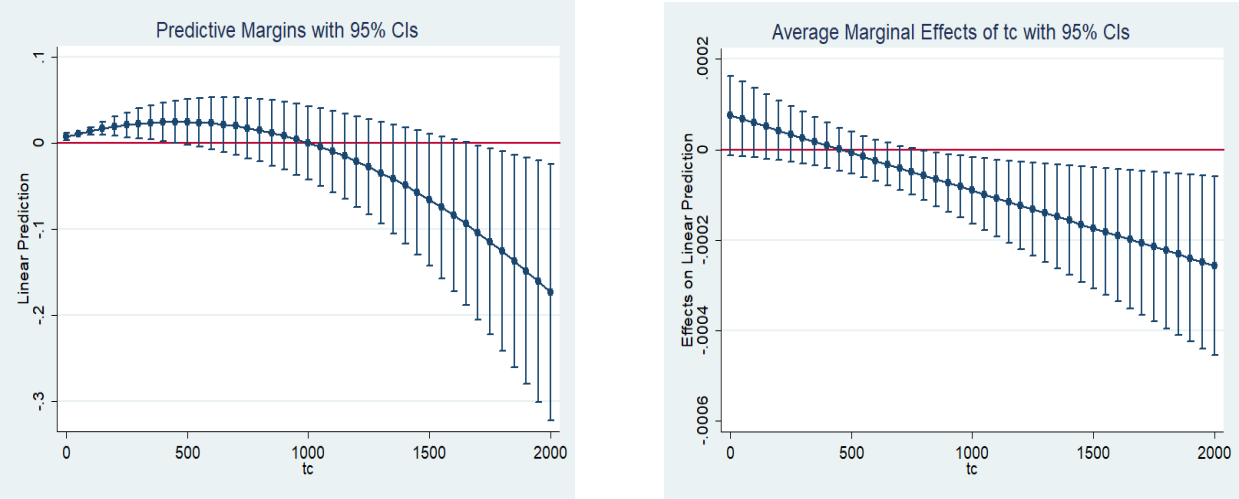


Figure 2: Predictive margins and average marginal effects of time until completion (in days) on acquirer's cumulative abnormal returns one month after the close of deal with 95% confidence intervals.

The results shown in Table 2 indicate a negative sign on the squared term of time until deal completion, confirming an inverse U-shaped relationship. We subject the model to the stringent test of Lind and Mehlum (2010). The null hypothesis of a monotone or U-shaped relationship is strongly rejected, indicating an inverse U-shaped relationship between time until deal completion and stock performance, and thus confirming hypotheses 1 and 3. In other words, the results shown in Table 2 support both the due diligence hypothesis and the overdue hypothesis. This result implies that, up until a certain optimal period of deal completion, post-M&A stock performance measured by cumulative abnormal returns or buy-and-hold abnormal returns increases until it reaches a maximum; when time until deal completion extends beyond this optimal time, however, stock performance declines, as the possible existence of challenges to the deal is being signaled. The results for various time intervals show that our findings are robust to various time specifications. The Wald test that the quadratic term in the model is zero is strongly rejected in all time intervals except for one year after deal completion, where it is marginally rejected at the 10% level.

Interestingly, the extremum revealed empirically in our sample for the one-month interval is 455 days (one year and three months), which is far beyond the mean period of about two months for deal completion in our sample. This indicates that deals that should take an average of about two months but that extend beyond one year arouse concern in the market given the opaque nature of information provision during the negotiation process, coupled with the desire to close deals quickly to benefit from timely synergies.

When seeking to determine the economic impact of time until deal completion on stock performance, we cannot directly employ the magnitude of the coefficients of time and time-squared in the models.[11] The literature agrees that the co-efficient of a quadratic term in a model is not equal to the marginal effect, in contrast to the case of a normal linear regression without any polynomial terms or interaction terms (Zelner 2009). We therefore present a graphical illustration of how time until deal completion affects the acquirer's stock performance at various durations until deal close in Figure 2 for the one-month interval. As presented in the predictive margins graph of Figure 2, there is a clear inverse U-shaped relationship between time until deal completion and stock performance. As time until deal completion increases toward the turning point, the acquirer's abnormal stock returns increase, but they begin to decrease beyond the extremum. Regarding marginal effects, for deals that close up until the turning point of about 455 days, every additional day adds a positive abnormal return to the firm's overall stock performance until an extremum, thus lending support to the due diligence hypothesis. However, beyond the extremum, every additional day adds a negative abnormal return to the stock performance, resulting in a decreasing slope and a decline in performance, supporting the overdue hypothesis.

[11] This applies not only to squared terms but also to other polynomial terms, as well as interaction terms in any empirical model. This issue is further complicated if the regression is a non-linear one such as the probit or logit regression. For further discussion on this topic, consult the excellent treatment in (Zelner 2009).

Concerning the other control variables, our results confirm the literature in many ways. Deals paid for in cash are positively related to subsequent acquirer performance, though not significantly, in our sample. The literature generally finds that deals that are expected to result in large gains for the acquirer and in which the acquirer is confident are paid for in cash to prevent the target's shareholders from benefitting from the increases in share prices that would result if they were paid for in stock. Differences across industries and geographical locations are associated with negative coefficients, as expected. The coefficient on shareholder protection in the target country is positive, indicating that M&A involving target countries with strong shareholder protection are associated with increases in overall share performance and less risk of expropriation from acquirers' gains, which strongly aligns with both our intuition and the literature. Given the widespread criticism in the literature of using stock performance alone to measure performance, we present further evidence using the acquirer's post-deal operational and financial performance.

B. Operational Performance

We measure operational performance using turnover as a proxy. Thanos and Papadakis (2012) show that this proxy is used in the accounting literature as an alternative approach to measuring operational performance or efficiency. We expect an increase in turnover for deals that improve the acquirer's operational performance post-M&A. We run a panel regression controlling for firm fixed effects, as in the model in equation X below:

$$\Delta TURNOVER_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it} \qquad (X)$$

The results of this regression are presented in Table 3 below. The results for one year and three years after deal completion indicate an inverse U-shaped relationship between time until deal completion and operational performance, reinforcing our previous results. The results for two and five years after the deal reject the inverse U-shaped relationship in the stringent test. The corresponding predictive margins and

marginal effect graphs for one year after the deal are shown in Figure 3. The summary (albeit weak) evidence is that the due diligence and overdue hypotheses are complementary and are supported with respect to operational performance.

Table 3: Effect of time until completion on operational performance

This table investigates the effect of time until completion on acquirer's operational performance post-M&A for various time intervals: one year, two years, three years, and five years after the deal. The dependent variable is the change in turnover of the acquirer measured by sales scaled by total assets from the close of the deal and t-years after. All variables are defined in Appendix A. Firm fixed effects are included in all models, and the Wald tests verifying that the quadratic terms in the models are equal to zero are reported. In addition, the turning point of the quadratic relationship between time until deal completion and the dependent variable is reported as well as the result and implication of the stringent test of quadratic relation, following Lind and Mehlum (2010). Standard errors are corrected for heteroscedasticity and clustered by firm and year.

Model: $\Delta TURNOVER_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Dependent Variable: ΔTURNOVER	**(1) 1 YEAR**	**(2) 2 YEARS**	**(3) 3 YEARS**	**(4) 5 YEARS**
Time	0.0054**	0.0052*	0.0090**	0.0022
	(0.022)	(0.089)	(0.044)	(0.401)
Time_sq	-0.0001*	-0.0001	-0.0002	-0.0001
	(0.071)	(0.275)	(0.137)	(0.305)
Cash payment	0.0013	-0.0056	0.0074	-0.0100
	(0.899)	(0.638)	(0.620)	(0.353)
Industry difference	0.0063	0.0032	0.0161	0.0184
	(0.713)	(0.848)	(0.315)	(0.412)
Shareholder protection	-0.1629***	-0.1248	-0.1465*	-0.0714
	(0.010)	(0.146)	(0.088)	(0.475)
Language difference	-0.0673**	-0.0625	-0.0551	-0.0134
	(0.034)	(0.199)	(0.232)	(0.825)
Geographical difference	0.0119	0.0405	0.0332	-0.0141
	(0.356)	(0.124)	(0.109)	(0.590)
GDP growth	0.0084*	0.0081	0.0085**	0.0115*
	(0.056)	(0.173)	(0.026)	(0.055)
Total stock growth	0.0039	-0.0311***	-0.0279**	-0.0207
	(0.670)	(0.000)	(0.021)	(0.243)
Ownership percentage	0.0014**	0.0004	-0.0005	-0.0002
	(0.018)	(0.789)	(0.764)	(0.938)
Value of transaction	0.0082**	0.0051	0.0049	0.0110***

	(0.021)	(0.252)	(0.308)	(0.001)
Size	0.0711***	0.0762***	0.0696***	0.1070***
	(0.000)	(0.000)	(0.004)	(0.000)
Cash flow	-0.0856	-0.1025	-0.1880*	-0.1603
	(0.208)	(0.203)	(0.080)	(0.124)
Debt	0.0976**	-0.0087	-0.0267	-0.0926
	(0.010)	(0.879)	(0.682)	(0.225)
Tobin's Q	-0.0115**	-0.0243***	-0.0295***	-0.0119
	(0.025)	(0.000)	(0.000)	(0.184)
Constant	-0.5257***	-0.3943*	-0.2408	-0.6065*
	(0.000)	(0.098)	(0.323)	(0.068)
Firm fixed effect	Y	Y	Y	Y
Observations	5,538	5,152	4,794	4,193
R-squared	0.051	0.041	0.043	0.046
Number of firms	2,491	2,293	2,109	1,801
Extremum of time until completion(days)	691	842	646	342
Wald test: Time_sq=0	Rejected	Not rejected	Not rejected	Not rejected
Utest null	Monotone/U	Monotone/U	Monotone/U	Monotone/U
Utest (P-value)	0.0497	0.195	0.10	0.252
Utest-implication	Strong Inverse-U	Monotone/U	Weak Inverse-U	Monotone/U

*P-values are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Rejection of the Wald test at p < 0.05, while its marginal rejection is at p < 0.1*

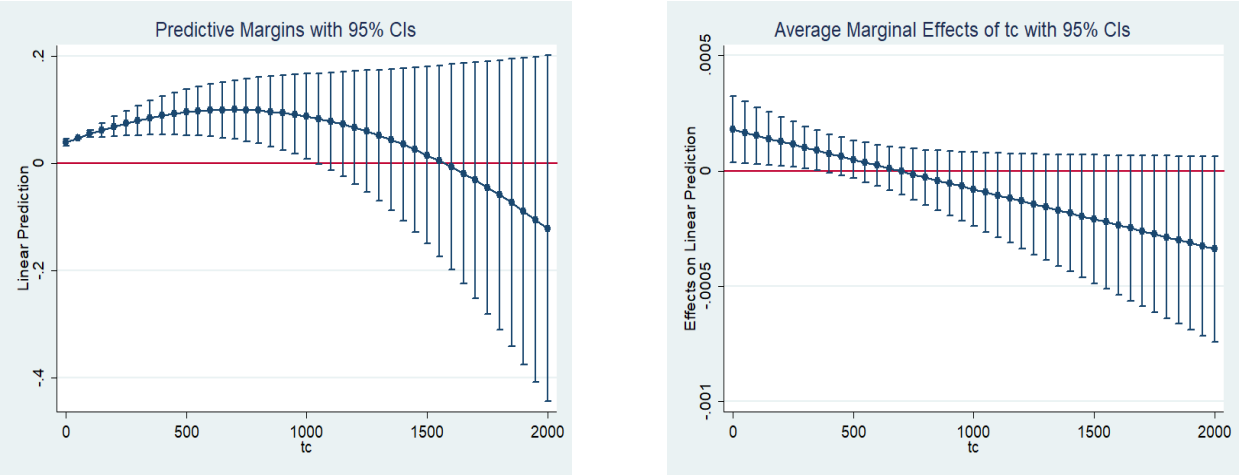


Figure 3: Predictive margins and average marginal effects of time until completion (in days) on acquirer turnover one year after the close of deal with 95% confidence intervals.

C. Financial Performance

We deepen our analysis of post-M&A performance by employing a measure of financial performance proxied by the change in return on assets as measured by the change in earnings before interest and taxes scaled by total assets (Thanos and Papadakis 2012). We employ a panel regression, as in equation XI, and control for firm fixed effects and correct standard errors for heteroscedasticity and serial correlation, as above. The results are presented in Table 4 and graphically in Figure 4 below:

$$\Delta ROA_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it} \quad \text{(XI)}$$

The results shown in Table 4 support hypotheses 1 and 3 for the time intervals of one, two, and three years post-deal. However, the null of a monotone or U-shaped relationship between time and financial performance cannot be rejected for the interval of five years after deal completion. All the foregoing results confirm that the due diligence hypothesis (hypothesis 1) and the overdue hypothesis (hypothesis 3) are complementary given the presence of an inverse U-shaped relationship between time until deal completion and post-M&A performance.

Table 4: Effect of time until completion on financial performance

This table investigates the effect of time until completion on acquirer's financial performance post-M&A for various time intervals: one year, two years, three years, and five years after the deal. The dependent variable is the change in return on assets of the acquirer measured as earnings before interest and taxes scaled by total assets from the close of the deal and t-years after. All variables are defined in Appendix A. Firm fixed effects are included in all models, and the Wald tests verifying that the quadratic term in the models are equal to zero are reported. In addition, the turning point of the quadratic relationship between time until deal completion and the dependent variable is reported as well as the result and implication of the stringent test of quadratic relation, following Lind and Mehlum (2010). Standard errors are corrected for heteroscedasticity and clustered by firm and year.

Model: $\Delta ROA_{it} = \alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Dependent Variable: ΔROA	**(1) 1 YEAR**	**(2) 2 YEARS**	**(3) 3 YEARS**	**(4) 5 YEARS**
Time	0.0025***	0.0032*	0.0018	0.0013
	(0.003)	(0.069)	(0.189)	(0.276)
Time_sq	-0.0001***	-0.0002***	-0.0001*	-0.000016
	(0.001)	(0.001)	(0.058)	(0.676)
Cash payment	-0.0005	-0.0004	-0.0015	0.0006
	(0.879)	(0.953)	(0.804)	(0.919)

Industry difference	-0.0044	-0.0043	-0.0022	0.0048
	(0.175)	(0.436)	(0.627)	(0.161)
Shareholder protection	-0.0084	-0.0931	-0.0223	-0.0363
	(0.741)	(0.273)	(0.689)	(0.485)
Language difference	0.0001	-0.0359	0.0019	-0.0090
	(0.992)	(0.332)	(0.930)	(0.663)
Geographical difference	0.0036	0.0185	0.0002	0.0035
	(0.574)	(0.342)	(0.990)	(0.791)
GDP growth	-0.0017	-0.0015	-0.0013	-0.0008
	(0.294)	(0.328)	(0.355)	(0.508)
Total stock growth	-0.0022	-0.0072	-0.0062	-0.0011
	(0.614)	(0.145)	(0.242)	(0.696)
Ownership percentage	0.0003**	0.0004**	0.0003	0.0003
	(0.018)	(0.028)	(0.207)	(0.208)
Value of transaction	0.0001	0.0005	0.0021	0.0017
	(0.955)	(0.793)	(0.245)	(0.345)
Size	-0.0228***	-0.0262***	-0.0255***	-0.0291***
	(0.000)	(0.000)	(0.000)	(0.002)
Cash flow	0.0134	-0.0111	0.0141	-0.0347
	(0.733)	(0.844)	(0.718)	(0.309)
Debt	0.1401***	0.1435***	0.1292***	0.0892**
	(0.000)	(0.003)	(0.003)	(0.042)
Tobin's Q	-0.0011	-0.0020	-0.0054	-0.0006
	(0.778)	(0.814)	(0.516)	(0.943)
Constant	0.0500	0.1205	0.0969*	0.1383*
	(0.242)	(0.139)	(0.068)	(0.056)
Firm fixed effect	Y	Y	Y	Y
Observations	5,510	5,129	4,778	4,182
R-squared	0.063	0.040	0.039	0.024
Number of firms	2,473	2,281	2,101	1,794
Extremum of time until completion(days)	424	214	353	1233
Wald test: Time_sq=0	Rejected	Rejected	Marginal	Not rejected
Utest null	Monotone/U	Monotone/U	Monotone/U	Monotone/U
Utest (P-value)	0.008	0.06	0.09	0.425
Utest-implication	Strong Inverse-U	Weak Inverse-U	Weak Inverse-U	Monotone/U

*P-values are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Rejection of the Wald test at p < 0.05, while its marginal rejection is at p < 0.1*

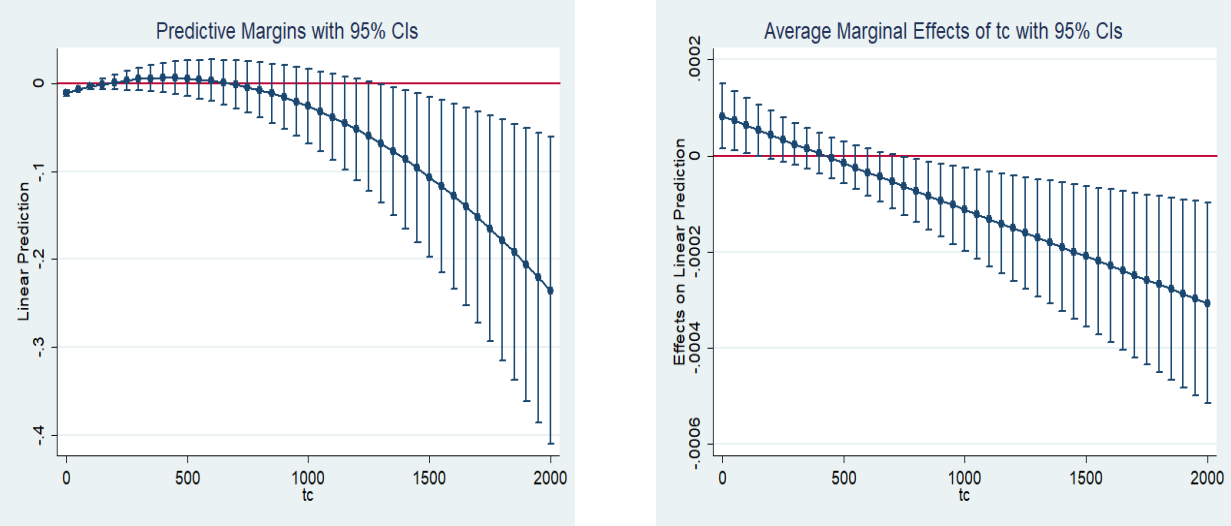


Figure 4: Predictive margins and average marginal effects of time until completion (in days) on acquirer's return on assets one year after close of deal with 95% confidence intervals.

D. Likelihood of Failure

We further test our hypotheses by investigating how time until deal completion is related to failure for the acquirer after the deal closes. We consider failure to be an event in which the acquirer is delisted at *t* periods post-deal (Fama and French 2004; Chang, Kim, and Shim 2013).

First, we present a graph of the failure rates of the firms in our sample in Figure 5. As the figure shows, there is a substantial rate of failure for acquirers post-M&A in our sample. About one-third of firms fail within five years after the deal. Some studies find post-M&A failure rates of about 70% or 90% (Christensen et al. 2011), so our estimates are relatively conservative. Such high rates of failure motivate an investigation into the determinants of acquirer failure post-M&A. We therefore run a logistic regression with a failure dummy as the dependent variable in equation XII.

$$\Pr(\text{Failure}_{it} = 1) = f\left(\alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + y_t + i_i\right) \qquad \text{(XII)}$$

where *f(.)* is the logit function.

The results are shown in Table 5 below. To aid interpretation, the marginal effects associated with the regression are reported in Table 6, and the corresponding predictive margin graph and marginal effect graph for two years post-deal are provided in Figure 6.

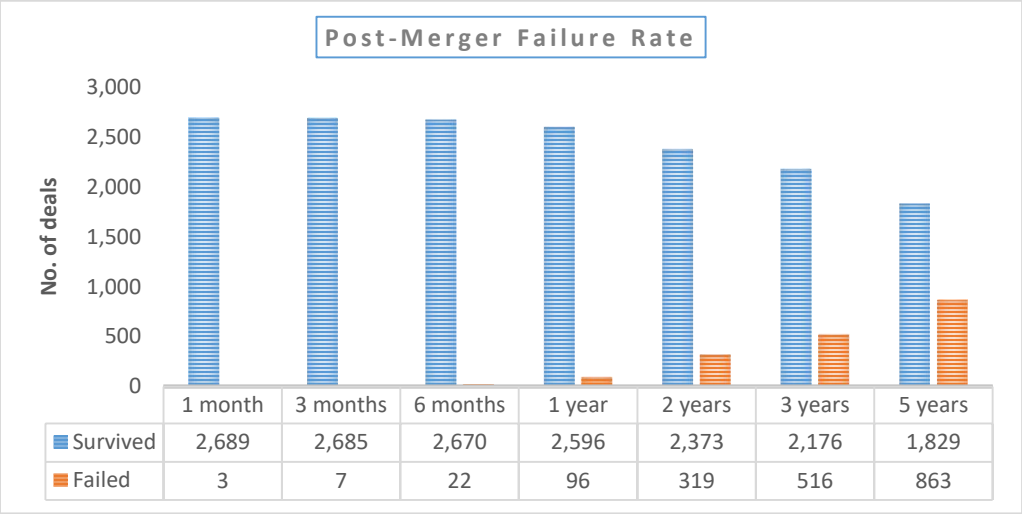


Figure 5: Histogram comparing between the number of deals that survive or fail post-M&A with various time intervals.

The results in Table 5 and Table 6 support the due diligence hypothesis and the overdue hypothesis with respect to the likelihood of failure, as predicted in hypotheses 2 and 4. The results show a strong U-shaped relationship for the two- and three-year time intervals. For the one-year and five-year intervals, however, the composite null of the stringent test of a U-shaped relationship is not rejected. Overall, the results shown in Tables 5 and 6 support the U-shaped relationship between time until deal completion and the likelihood of failure. The predictive margins in Figure 6 conform to the shape of a logit distribution and reveal low and decreasing levels of failure prediction before the turning point, and a sharp increase in failure prediction in the days beyond the optimum, which worsens every day. Moreover, the marginal effect is negative before the turning point, indicating that, before the turning point, each additional day reduces the

likelihood of failure (supporting the due diligence hypothesis) but that, after the turning point, the marginal effect is always above zero, though it rises sharply and falls. However, the fact that it remains positive beyond the turning point shows that each additional day beyond the turning point is associated with an increased likelihood of failure, supporting the overdue hypothesis.

Table 5: Effect of time until completion on failure

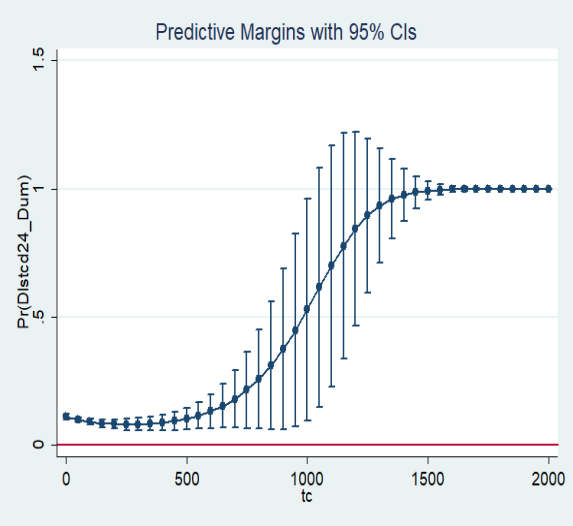
This table investigates the effect of time until completion on acquirer's likelihood of failure post-M&A at various time intervals: one year, two years, three years, and five years after the deal by a logistic regression. The dependent variable is a dummy that equals one if the firm is delisted by t periods after the close of the deal and zero otherwise. All variables are defined in Appendix A. Industry and year effects are included in all models, and the Wald tests verifying that the quadratic terms in the models are equal to zero are reported. In addition, the turning point of the quadratic relationship of time until deal completion with the dependent variable is reported as well as the result and implication of the stringent test of quadratic relation, following Lind and Mehlum (2010). Standard errors are clustered by firm to deal with serial correlation.

Model: $\Pr(\text{Failure}_{it} = 1) = f(\alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + y_t + i_i)$,
where f(.) is the logit function

Dependent Variable: Failure Dummy	**(1) 1 YEAR**	**(2) 2 YEARS**	**(3) 3 YEARS**	**(4) 5 YEARS**
Time	-0.0010	-0.0810**	-0.0748***	-0.0440*
	(0.985)	(0.015)	(0.009)	(0.090)
Time_sq	-0.00002	0.0046***	0.0036**	0.0014
	(0.995)	(0.004)	(0.016)	(0.340)
Cash payment	-0.3002*	-0.1868**	-0.1016	-0.0420
	(0.059)	(0.044)	(0.198)	(0.537)
Industry difference	0.0014	0.0266	0.0927	0.1038
	(0.994)	(0.819)	(0.329)	(0.230)
Shareholder protection	-1.9610	-1.3357	-0.8220	-0.7881
	(0.322)	(0.190)	(0.238)	(0.202)
Language difference	-1.1982	-0.5324	-0.1993	-0.4479
	(0.308)	(0.346)	(0.599)	(0.178)
Geographical difference	0.2673	0.0856	0.1212	0.1988
	(0.653)	(0.779)	(0.582)	(0.307)
GDP growth	0.1387*	0.0445	0.0548	0.0803**
	(0.099)	(0.362)	(0.142)	(0.011)
Total stock growth	-0.0602	-0.0044	-0.0883	-0.1212
	(0.727)	(0.955)	(0.388)	(0.224)
Ownership percentage	-0.0115	-0.0029	0.0001	0.0038

	(0.231)	(0.626)	(0.982)	(0.384)
Value of transaction	0.0047	0.0651*	0.0799***	0.0565**
	(0.929)	(0.071)	(0.009)	(0.031)
Size	-0.2945***	-0.2714***	-0.3184***	-0.3369***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash flow	0.2448	0.4942	0.5915*	0.8755***
	(0.730)	(0.219)	(0.087)	(0.008)
Debt	1.4275***	1.1018***	0.8794***	0.7516***
	(0.000)	(0.000)	(0.000)	(0.000)
Tobin's Q	-0.1074	-0.2031***	-0.1916***	-0.1940***
	(0.123)	(0.000)	(0.000)	(0.000)
Constant	0.0095	0.4068	0.5462	0.6835
	(0.996)	(0.654)	(0.428)	(0.274)
Industry effect	Y	Y	Y	Y
Year effect	Y	Y	Y	Y
Observations	5,900	5,916	5,916	5,918
Pseudo R-squared	0.0791	0.0751	0.0785	0.0847
Extremum of time until completion(days)	-745	263	313	466
Wald test: Time_sq=0	Not rejected	Rejected	Rejected	Not rejected
Utest Null	Monotone/ Inverse-U	Monotone/ Inverse-U	Monotone /Inverse-U	Monotone/ Inverse-U
Utest (P-value)	-	0.007	0.0108	0.206
Utest-implication	Monotone/ Inverse-U	Strong U	Strong U	Monotone/ Inverse-U

*P-values are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Rejection of the Wald test at p < 0.05, while its marginal rejection is at p < 0.1*



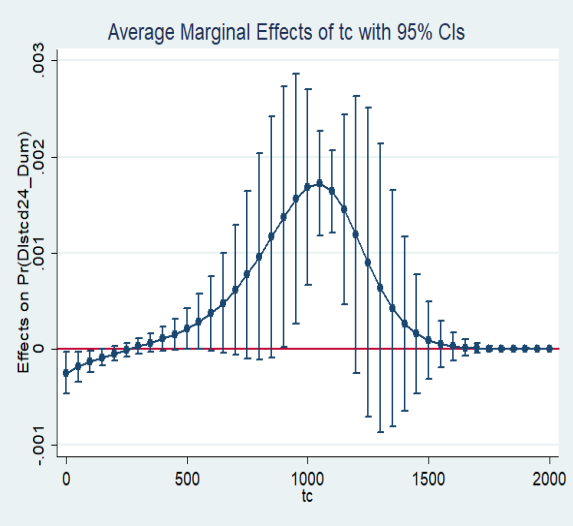


Figure 6: Predictive margins and average marginal effects of time until completion (in days) on acquirer's likelihood of failure two years after the close of deal with 95% confidence intervals.

Table 6: Effect of time until completion on actual failure (Marginal Effects)
This table reports the marginal effects of the regression results in Table 5. The dependent variable is a dummy that equals one if the firm is delisted by t periods after the close of the deal and zero otherwise. All variables are defined in Appendix A. Standard errors are clustered by firm to deal with serial correlation. Model: $\Pr(\text{Failure}_{\text{dummy}_{it}} = 1) = f(\alpha + \beta_1 * tc_{it} + \beta_2 * {tc_{it}}^2 + \gamma' \, Control\ variables_{it} + y_t + i_i)$, *where f(.) is the logit function*

Dependent Variable: Failure Dummy	**(1) 1 YEAR**	**(2) 2 YEARS**	**(3) 3 YEARS**	**(4) 5 YEARS**
Time	-0.000029	-0.0057**	-0.0082**	-0.0071*
	(0.982)	(0.025)	(0.011)	(0.074)
Cash payment	-0.0085*	-0.0161**	-0.0132	-0.0076
	(0.061)	(0.044)	(0.198)	(0.537)
Industry difference	0.0000	0.0023	0.0120	0.0188
	(0.994)	(0.819)	(0.329)	(0.230)
Shareholder protection	-0.0554	-0.1152	-0.1064	-0.1424
	(0.322)	(0.190)	(0.238)	(0.202)
Language difference	-0.0339	-0.0459	-0.0258	-0.0809
	(0.308)	(0.346)	(0.599)	(0.178)
Geographical difference	0.0076	0.0074	0.0157	0.0359
	(0.653)	(0.779)	(0.582)	(0.308)
GDP growth	0.0039	0.0038	0.0071	0.0145**

	(0.101)	(0.363)	(0.142)	(0.011)
Total stock growth	-0.0017	-0.0004	-0.0114	-0.0219
	(0.727)	(0.955)	(0.388)	(0.225)
Ownership percentage	-0.0003	-0.0003	0.0000	0.0007
	(0.232)	(0.626)	(0.982)	(0.384)
Value of transaction	0.0001	0.0056*	0.0103***	0.0102**
	(0.929)	(0.071)	(0.009)	(0.030)
Size	-0.0083***	-0.0234***	-0.0412***	-0.0609***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash flow	0.0069	0.0426	0.0765*	0.1582***
	(0.730)	(0.219)	(0.087)	(0.008)
Debt	0.0403***	0.0950***	0.1138***	0.1358***
	(0.000)	(0.000)	(0.000)	(0.000)
Tobin's Q	-0.0030	-0.0175***	-0.0248***	-0.0350***
	(0.125)	(0.000)	(0.000)	(0.000)
Observations	5,900	5,916	5,916	5,918

*P-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*

E. Survival Analysis

The logit model presents evidence on how time until deal completion influences the likelihood of failure post-M&A. However, the logit model uses only status information (0 or 1) and does not consider the duration until the status changes. However, the transition intensities, which are cumulative, are worth considering. We therefore conduct a survival analysis to investigate how time until deal completion influences how long it takes until the acquirer fails (i.e., is subsequently delisted or is involved in another M&A).

Given that $f(t)$ represents the likelihood of experiencing an event at a point in time t (in this case, M&A failure after the deal closes), the cumulative distribution function associated with observing the event within a time interval (in this case, from deal close until deal failure) is given as $F(t) = \int_0^t f(t)\,\mathrm{dt}$. A simple transformation of the cumulative distribution function gives us the survival function, which is the probability of survival beyond time t, expressed as $S(t) = 1 - F(t)$. We model the hazard rate, which is

the relative likelihood that event failure occurs at time t, conditional on the survival of a subject up to time t. Put intuitively, the hazard rate is the instantaneous rate of failure without regard for the accumulation of hazard up to time t. The result of the survival analysis is shown in Table 7 below.

Table 7: Survival Analysis

This table shows a survival analysis of the time until the acquirer experiences a failure, defined as being delisted by t periods after the close of the deal. All variables are defined in Appendix A. Standard errors are corrected for heteroscedasticity and clustered by firm to deal with serial correlation.

Model: $h(t \mid tc_{it}) = f(\alpha + \beta_1 * tc_{it} + \gamma' \, Control\ variables_{it} + \varepsilon_{it})$,

where f(.) is the underlying distribution of the model, t is the time until failure, and tc is the time until deal completion. The gamma model and log-normal model results are reported with selection criteria based on the AIC and BIC values shown in Panel B.

Panel A: Gamma and Log-Normal Models

	(1)	(2)	(3)	(4)
Dependent Variable: Time until Failure	**Gamma**	**Gamma HR**	**Lognormal**	**Lognormal HR**
Time	0.0149*	1.0150*	0.0181*	1.0182*
	(0.099)	(0.099)	(0.068)	(0.068)
Cash payment	0.1186**	1.1259**	0.0853	1.0890
	(0.045)	(0.045)	(0.148)	(0.148)
Industry difference	-0.0196	0.9806	-0.0647	0.9373
	(0.781)	(0.781)	(0.355)	(0.355)
Shareholder protection	1.4482***	4.2556***	1.4157***	4.1194***
	(0.002)	(0.002)	(0.004)	(0.004)
Language difference	0.8234***	2.2782***	0.8515***	2.3431***
	(0.001)	(0.001)	(0.002)	(0.002)
Geographical difference	-0.1744	0.8400	-0.2495	0.7792
	(0.301)	(0.301)	(0.146)	(0.146)
GDP growth	-0.1013***	0.9037***	-0.0944***	0.9099***
	(0.000)	(0.000)	(0.000)	(0.000)
Total stock growth	0.1029	1.1084	0.0802	1.0835
	(0.299)	(0.299)	(0.403)	(0.403)
Ownership percentage	0.0033	1.0033	0.0016	1.0016
	(0.361)	(0.361)	(0.666)	(0.666)
Value of transaction	-0.0157	0.9844	-0.0429**	0.9580**
	(0.443)	(0.443)	(0.036)	(0.036)
Size	0.2291***	1.2575***	0.2808***	1.3242***
	(0.000)	(0.000)	(0.000)	(0.000)

Cash flow	-0.6185**	0.5387**	-0.8109***	0.4445***
	(0.012)	(0.012)	(0.001)	(0.001)
Debt	-0.7247***	0.4845***	-0.7668***	0.4645***
	(0.000)	(0.000)	(0.000)	(0.000)
Tobin's Q	0.0707***	1.0733***	0.1044***	1.1100***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	5.2905***	198.4360***	5.6526***	285.0416***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	4,456	4,456	4,456	4,456

Panel B: AIC and BIC criterion for deciding underlying distribution of hazard function

Model	Obs	Log-likelihood (null)	Log-likelihood (model)	Degree of freedom	AIC	BIC
exponential	4456	-4065.32	-3833.03	15	7696.068	7792.098
weibull	4456	-4028.43	-3816.88	16	7665.756	7768.188
llogistic	4456	-3914.05	-3719.47	16	7470.94	7573.372
lnormal	4456	-3869.09	-3691.2	16	7414.39	7516.822
gompertz	4456	-3882.64	-3699.45	16	7430.901	7533.333
gamma	4456	-3813.39	-3666.76	17	7367.511	7476.345
cox proportional	4456	-12300.4	-12105.9	14	24239.86	24329.49

*P-values are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.*

First, a test of the proportional hazard assumption shows that the assumption is violated in our sample, for which reason we do not use the semi-parametric cox-proportional hazard model for our survival analysis. Alternatively, we use parametric models, which assume an underlying distribution of the error term. However, our choice of the underlying distribution is not arbitrary. We employ the AIC and BIC information criterion to select the most suitable model for the parametric model. The results shown in Panel B of Table 7 show that the gamma distribution and the lognormal distribution are the best in terms of the assumptions of the underlying distribution; we thus present the results related to these two distributions. As can be seen in the reported hazard ratios for both the gamma distribution parametric model and the lognormal distribution parametric model, each additional month before the closing of a deal increases the

hazard of experiencing a subsequent failure by 0.015% and 0.0182%, respectively, lending more support to the overdue hypothesis.

F. Robustness Checks

We conduct a further investigation to test the robustness of our results. As mentioned, the time to deal completion may not be exogenously determined, but rather endogenously influenced. Specifically, deal closing times tend to differ according to how complex the deal is (Luypaert and De Maeseneire 2015); whether it is a cross deal (Dikova, Sahib, and Van Witteloostuijn 2010); whether the target experienced poor performance and is being acquired after bankruptcy (Moeller and Carapeto 2012; Carapeto, Moeller, and Faelten 2009); whether it is a friendly or hostile deal (Offenberg and Pirinsky 2015); whether the acquirer's stocks are overvalued (Ang and Cheng 2006); whether the deal occurs during a financial crisis (Sánchez, Seeber, and Goldberg 2011); and what type of deal advisors are involved (Hunter and Jagtiani 2003).

To control for possible endogeneity that may affect our findings, we re-estimate our regressions related to stock performance, financial performance, and operational performance by employing a two-stage least squares regression. We account for complexity by considering the transaction value; for cross-border deals by using a dummy equal to one when the deal is cross-border; for whether the deal is undertaken during a financial crisis by using a financial crisis dummy; and for the target's past performance by using a bankruptcy flag dummy. The data are all obtained from the SDC. We also use a stock payment dummy and Tobin's q to control for possible market valuation effects on the timing of the deal and control for deal advisors' influence on the deal completion time using the number of acquirer and target advisors (where available). The excluded instruments in our regressions are the number of acquirer advisors and the number of target advisors.

Regarding the exclusion conditions, the number of target and acquirer advisors should not have a direct effect on the acquirer's post-M&A performance. The type and quality of the acquirer and target advisors should have a direct effect on their performance rather than the number of the advisors. We argue that though the kind and number of acquirer and target advisors can potentially influence performance of the acquirer, it is unlikely that this effect will be direct. The number of acquirer advisors and target advisors should only affect the performance of the acquirer through their influence on how fast and timely the deal is consummated. Though not a direct test of the exclusion condition, the Hansen J-Test of over-identifying restrictions with the null that the instrumental variables are valid (i.e. uncorrelated with error term and the excluded instruments are correctly excluded from the estimated equation) is not rejected.

To deal with potential issues caused by the use of a weak instrument, we re-run our regressions using an estimator known to be robust to weak instruments, that is, Fuller's modified LIML estimation (Fuller 1977)[12]. We follow Hahn, Hausman, and Kuersteiner (2004) in using $\alpha = 4$ for our Fuller estimation, as they find that it works significantly better than $\alpha = 2$ (Hahn, Hausman, and Kuersteiner 2004). We present and discuss our results from the 2SLS shown in Tables 8, 9, and 10 below.

The results shown in Table 8 confirm the validity of our results for the one-, two-, and three-year intervals, though only weakly for the one-year interval. There is an inverse U-shaped relationship between time until deal completion and the acquirer's stock performance post-M&A for these intervals. For the one-, three-, and six-month intervals, our hypotheses are not supported with respect to post-M&A performance, perhaps due to the loss of many observations caused by a lack of data on the number of acquirer and target advisors.

[12] The Fuller estimation results are available upon request from the authors.

None of the results for operational performance shown in Table 9 is significant at the 5% level. The only noteworthy observation is that the coefficient on time until deal completion has the expected sign. Regarding financial performance, the results shown in Table 10 indicate that both hypotheses 1 and 3 are supported for all time intervals except the five-year period. Thus, after possible endogeneity concerns are controlled for, our overall results support the two complementary hypotheses.

5. Conclusion

This study empirically investigates how time until deal completion affects the acquirer's post-M&A performance and likelihood of failure. We propose and test the complementary overdue and due diligence hypotheses. The due diligence hypothesis posits that deals take longer to complete because the acquirer conducts due diligence, with a subsequent expectation of superior post-M&A performance and reduced likelihood of failure. Conversely, the overdue hypothesis posits that deals that take a longer-than-optimal time to complete face fundamental challenges, leading to poor post-M&A performance and increased risk of failure. We reveal a strong inverse U-shaped relationship between time until deal completion and performance as measured by cumulative abnormal returns, buy-and-hold abnormal returns, changes in turnover, and changes in return on assets. We also find a U-shaped relationship between time until deal completion and the likelihood of failure (where the acquirer is delisted post-M&A). These findings all support both the overdue hypothesis and the due diligence hypothesis.

Our results imply that, though not directly communicated to the market, the time elapsed until deal completion may be an indicator of a merger's quality as well as its future performance and/or failure likelihood. Future research on the performance and failure of M&A may need, at the very minimum, to incorporate time until deal completion as a determinant or control variable, or (ideally) to use its squared term.

Table 8: Two-stage Least Square Regression of Effect of Time until Completion on Stock Performance

This table investigates the effect of time until completion on acquirer's stock performance post-M&A at various time intervals by a 2SLS fixed effects regression. For the one- and three-month time intervals, the cumulative abnormal return is used as the dependent variable; for the six-month, one-year, two-year, and three-year intervals, the buy-and-hold abnormal returns is used as the dependent variable. All variables are defined in Appendix A. Firm fixed effects are included in all models and standard errors are corrected for heteroscedasticity and clustered by firm and year.

PANEL A:

Model(First stage): $tc_{it} = \alpha + \beta' IV_{it} + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Model(First stage): $tc_{it}{}^2 = \alpha + \beta' IV_{it} + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variable:	**1 MONTH tc**	**1 MONTH tc-squared**	**3 MONTHS tc**	**3 MONTHS tc-squared**	**6 MONTHS tc**	**6 MONTHS tc-squared**	**1 YEAR tc**	**1 YEAR tc-squared**	**2 YEARS tc**	**2 YEARS tc-squared**	**3 YEARS tc**	**3 YEARS tc-squared**
Acquirer advisors	0.5972*	7.5375	0.5972*	7.5375	0.5972*	7.5375	0.6332**	8.3981*	0.6730*	8.7293	0.6719*	8.8460
	(0.067)	(0.150)	(0.067)	(0.150)	(0.067)	(0.150)	(0.049)	(0.099)	(0.053)	(0.104)	(0.069)	(0.121)
Target advisors	0.3670	3.3218	0.3670	3.3218	0.3670	3.3218	0.4558*	5.0837	0.4213*	4.8508	0.4371*	4.8739
	(0.160)	(0.411)	(0.160)	(0.411)	(0.160)	(0.411)	(0.064)	(0.169)	(0.093)	(0.200)	(0.076)	(0.200)
Cross border	-0.1109	-3.4499	-0.1109	-3.4499	-0.1109	-3.4499	-0.1572	-4.7790	-0.1463	-4.9893	-0.2521	-5.9664
	(0.862)	(0.702)	(0.862)	(0.702)	(0.862)	(0.702)	(0.808)	(0.603)	(0.827)	(0.596)	(0.707)	(0.529)
Financial crisis	-0.4320	-11.8933	-0.4320	-11.8933	-0.4320	-11.8933	-0.3873	-11.2443	-0.3419	-11.5324	-0.3349	-11.8795
	(0.429)	(0.246)	(0.429)	(0.246)	(0.429)	(0.246)	(0.495)	(0.286)	(0.568)	(0.325)	(0.598)	(0.354)
Target bankrupt	-0.3281	-6.9234	-0.3281	-6.9234	-0.3281	-6.9234	-0.3395	-7.1401	-0.8161	-8.9282	-0.8612	-9.0254
	(0.702)	(0.353)	(0.702)	(0.353)	(0.702)	(0.353)	(0.693)	(0.339)	(0.338)	(0.303)	(0.314)	(0.306)
Deal attitude	4.8013**	94.4949**	4.8013**	94.4949**	4.8013**	94.4949**	4.7933**	94.4027**	4.7925**	94.4455**	4.9272**	95.7037**
	(0.018)	(0.028)	(0.018)	(0.028)	(0.018)	(0.028)	(0.019)	(0.030)	(0.018)	(0.030)	(0.013)	(0.025)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	631	631	631	631	631	631	620	620	588	588	553	553
Number of firms	250	250	250	250	250	250	246	246	233	233	219	219

PANEL B:

Model(Second stage):

$$CAR_{it}/BHAR_{it} = \alpha + \beta_1 * \widehat{tc_{it}} + \beta_2 * \widehat{tc_{it}}^2 + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$$

Dependent Variable: CAR/BHAR	**(1) 1 MONTH**	**(2) 3 MONTHS**	**(3) 6 MONTHS**	**(4) 1 YEAR**	**(5) 2 YEARS**	**(6) 3 YEARS**
Time	0.0089	-0.0004	0.0296	0.1673	0.3780**	0.6770**
	(0.823)	(0.994)	(0.718)	(0.156)	(0.042)	(0.025)
Time_sq	0.0004	0.0008	-0.0007	-0.0100	-0.0214**	-0.0371**
	(0.863)	(0.816)	(0.886)	(0.152)	(0.041)	(0.037)
Cash payment	0.0083	-0.0005	0.0580	0.0706	0.0346	0.0723
	(0.585)	(0.984)	(0.158)	(0.281)	(0.659)	(0.579)
Industry difference	-0.0317	-0.0640*	-0.0713	-0.0514	-0.0051	0.1492
	(0.176)	(0.084)	(0.260)	(0.576)	(0.972)	(0.498)
Shareholder protection	0.1223	0.3694	0.5892	0.5257	0.1887	1.1593
	(0.180)	(0.126)	(0.108)	(0.439)	(0.858)	(0.540)
Language difference	0.0843*	0.2072	0.2992	0.1697	-0.2076	0.2995
	(0.060)	(0.104)	(0.127)	(0.650)	(0.710)	(0.766)
Geographical difference	-0.0243	-0.0712	-0.1555*	-0.1336	0.0706	-0.1872
	(0.375)	(0.288)	(0.084)	(0.407)	(0.771)	(0.621)
GDP growth	-0.0017	0.0027	0.0027	0.0062	-0.0245	-0.0381
	(0.762)	(0.746)	(0.856)	(0.801)	(0.505)	(0.460)
Total stock growth	0.0303	0.0739	0.1691**	0.1988*	0.3944***	0.5545***
	(0.357)	(0.150)	(0.024)	(0.062)	(0.009)	(0.007)
Ownership percentage	0.0015*	0.0002	-0.0018	-0.0053	-0.0058	-0.0161**
	(0.057)	(0.920)	(0.513)	(0.158)	(0.358)	(0.048)
Value of transaction	-0.0086	-0.0051	-0.0311	-0.0489	-0.1112*	-0.1883**
	(0.558)	(0.819)	(0.350)	(0.184)	(0.057)	(0.028)
Size	-0.0137	-0.0353	-0.0671*	-0.1606**	-0.5232***	-0.7391***
	(0.385)	(0.155)	(0.067)	(0.021)	(0.001)	(0.001)
Cash flow	0.0298	0.0132	0.0816	0.2758	0.0130	-0.2222
	(0.780)	(0.941)	(0.827)	(0.574)	(0.983)	(0.804)

Debt	-0.0056	0.0998	0.3953**	0.7746**	1.1020**	1.5507**
	(0.919)	(0.401)	(0.044)	(0.011)	(0.011)	(0.039)
Tobin's Q	0.0088	0.0209	0.0134	-0.0026	-0.1604**	-0.2375***
	(0.399)	(0.219)	(0.502)	(0.911)	(0.020)	(0.007)
Constant	-0.1268	-0.0822	0.1026	0.8581	4.0271***	5.8214***
	(0.519)	(0.790)	(0.832)	(0.265)	(0.001)	(0.006)
Firm fixed effect	Y	Y	Y	Y	Y	Y
Observations	1,286	1,286	1,285	1,262	1,173	1,086
Number of firms	905	905	904	888	818	752
Extremum of time until completion(days)	-315	8	606	250	265	274
Wald test: Time_sq=0	Not rejected	Not rejected	Not rejected	Not rejected	Rejected	Rejected
Utest Null	Monotone/U	Monotone/U	Monotone/U	Monotone/U	Monotone/U	Monotone/U
Utest (P-value)	-	0.497	0.455	0.07	0.0213	0.0203
Utest-implication	Monotone/U	Monotone/U	Monotone/U	Weak Inverse-U	Strong Inverse-U	Strong Inverse-U

*P-values are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Rejection of the Wald test at p < 0.05, while its marginal rejection is at p < 0.1*

Table 9: Two-stage Least Square Regression of Effect of Time until Completion on Operational Performance

This table investigates the effect of time until completion on acquirer's operational performance post-M&A by a 2SLS fixed effects regression for various time intervals: one year, two years, three years, and five years after the deal. The dependent variable is the change in turnover of the acquirer from the close of the deal and t years after. All variables are defined in Appendix A. Firm fixed effects are included in all models and standard errors are corrected for heteroscedasticity and clustered by firm and year to deal with serial correlation.

PANEL A:

Model(First stage): $tc_{it} = \alpha + \beta' IV_{it} + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Model(First stage): $tc_{it}{}^2 = \alpha + \beta' IV_{it} + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1 YEAR	1 YEAR	2 YEARS	2 YEARS	3 YEARS	3 YEARS	5 YEARS	5 YEARS
Dependent Variables:	**tc**	**tc-squared**	**tc**	**tc-squared**	**tc**	**tc-squared**	**tc**	**tc-squared**
Acquirer advisors	0.6190*	7.7786	0.6369*	8.1515	0.6320*	8.0862	0.6893*	8.7207
	(0.074)	(0.154)	(0.086)	(0.163)	(0.096)	(0.173)	(0.088)	(0.168)
Target advisors	0.3069	2.8435	0.3456	3.0866	0.3241	2.8985	0.2267	1.8014
	(0.247)	(0.484)	(0.196)	(0.458)	(0.220)	(0.484)	(0.395)	(0.676)
Cross border	-0.0839	-3.8574	-0.1674	-4.6160	0.0184	-3.5227	-0.0193	-3.5803
	(0.902)	(0.689)	(0.806)	(0.634)	(0.979)	(0.727)	(0.982)	(0.765)
Financial crisis	-0.3233	-11.3933	-0.3546	-12.1304	-0.2767	-12.1503	-0.1806	-12.4586
	(0.568)	(0.302)	(0.563)	(0.327)	(0.666)	(0.350)	(0.797)	(0.396)
Target bankrupt	-0.7713	-8.3665	-0.7974	-8.3756	-0.9083	-9.2325	-1.0468	-10.1143
	(0.372)	(0.333)	(0.350)	(0.336)	(0.262)	(0.287)	(0.284)	(0.316)
Deal attitude	4.7912**	94.5899**	4.9427**	96.0361**	4.8950**	95.6850**	4.8951**	95.2006**
	(0.018)	(0.028)	(0.012)	(0.024)	(0.013)	(0.024)	(0.014)	(0.026)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Observations	600	600	569	569	536	536	478	478
Number of firms	237	237	226	226	211	211	186	186

PANEL B:

Model (Second stage):

$$\Delta TURNOVER_{it} = \alpha + \beta_1 * \widehat{tc_{it}} + \beta_2 * \widehat{tc_{it}}^2 + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$$

Dependent Variable: Δ **TURNOVER**	**(1)** **1 YEAR**	**(2)** **2 YEARS**	**(3)** **3 YEARS**	**(4)** **5 YEARS**
Time	0.0460	0.0373	0.0462	0.0371
	(0.225)	(0.424)	(0.348)	(0.487)
Time_sq	-0.0016	-0.0003	-0.0017	-0.0002
	(0.512)	(0.910)	(0.554)	(0.956)
Cash payment	-0.0060	-0.0169	-0.0237	-0.0460
	(0.774)	(0.579)	(0.377)	(0.190)
Industry difference	-0.0087	-0.0107	0.0406	0.0107
	(0.809)	(0.821)	(0.335)	(0.854)
Shareholder protection	-0.3290**	0.1318	-0.0222	-0.0831
	(0.046)	(0.580)	(0.911)	(0.766)
Language difference	-0.1911**	-0.0538	-0.1037	-0.0673
	(0.033)	(0.649)	(0.258)	(0.688)
Geographical difference	0.0998*	0.0737	0.0938	0.0800
	(0.063)	(0.213)	(0.132)	(0.258)
GDP growth	-0.0066	-0.0025	0.0024	-0.0110
	(0.391)	(0.864)	(0.835)	(0.566)
Total stock growth	0.0746	0.0487	-0.0086	0.0711
	(0.104)	(0.586)	(0.893)	(0.402)
Ownership percentage	-0.0003	-0.0024	-0.0029**	-0.0024
	(0.801)	(0.241)	(0.029)	(0.221)
Value of transaction	-0.0252*	-0.0331*	-0.0202	-0.0193
	(0.095)	(0.063)	(0.251)	(0.373)
Size	0.0464*	0.0406	0.0483	0.0479
	(0.093)	(0.245)	(0.230)	(0.339)
Cash flow	-0.2128	-0.4186	-0.2440	-0.3984
	(0.234)	(0.173)	(0.382)	(0.345)

Debt	0.2000**	0.0718	0.2702**	0.0403
	(0.038)	(0.623)	(0.042)	(0.809)
Tobin's Q	-0.0231**	-0.0292*	-0.0255*	-0.0120
	(0.016)	(0.055)	(0.090)	(0.523)
Constant	-0.0329	0.0488	-0.0627	0.0397
	(0.907)	(0.911)	(0.895)	(0.948)
Firm fixed effect	Y	Y	Y	Y
Observations	600	569	536	478
Number of firms	237	226	211	186
Extremum of time until completion(days)	427	1805	399	3214
Wald test: Time_sq=0	Not rejected	Not rejected	Not rejected	Not rejected
Utest Null	Monotone/U	Monotone/U	Monotone/U	Monotone/U
Utest (P-value)	0.282	0.495	0.295	-
Utest-implication	Monotone/U	Monotone/U	Monotone/U	Monotone/U

*P-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Rejection of the Wald test at $p < 0.05$, while its marginal rejection is at $p < 0.1$*

Table 10: Two-stage Least Square Regression of Effect of Time until Completion on Financial Performance

This table investigates the effect of time until completion on acquirer's financial performance post-M&A by a 2SLS fixed effects regression for various time intervals: one year, two years, three years, and five years after the deal. The dependent variable is the change in return on assets of the acquirer from the close of the deal and t years after. All variables are defined in Appendix A. Firm fixed effects are included in all models and standard errors are corrected for heteroscedasticity and clustered by firm and year to deal with serial correlation.

PANEL A:

Model(First stage): $tc_{it} = \alpha + \beta' IV_{it} + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Model(First stage): $tc_{it}{}^2 = \alpha + \beta' IV_{it} + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1 YEAR	1 YEAR	2 YEARS	2 YEARS	3 YEARS	3 YEARS	5 YEARS	5 YEARS
Dependent Variable:	**tc**	**tc-squared**	**tc**	**tc-squared**	**tc**	**tc-squared**	**tc**	**tc-squared**
Acquirer advisors	0.6209*	7.9367	0.6450*	8.4229	0.6332	8.2176	0.7020*	9.0499
	(0.084)	(0.158)	(0.096)	(0.164)	(0.111)	(0.184)	(0.096)	(0.168)
Target advisors	0.3048	2.7900	0.3556	3.2176	0.3435	3.1886	0.2247	1.7488
	(0.253)	(0.494)	(0.179)	(0.438)	(0.189)	(0.442)	(0.400)	(0.685)
Cross border	-0.1247	-4.5438	-0.0971	-3.5753	0.0587	-2.9148	-0.0244	-3.7105
	(0.856)	(0.639)	(0.888)	(0.712)	(0.933)	(0.776)	(0.977)	(0.757)
Financial crisis	-0.3673	-12.0384	-0.3760	-12.3862	-0.4633	-15.0392	-0.1721	-12.2388
	(0.503)	(0.280)	(0.538)	(0.313)	(0.452)	(0.245)	(0.806)	(0.402)
Target bankrupt	-0.7248	-7.6212	-0.8156	-8.6518	-0.8310	-8.0116	-1.0504	-10.2083
	(0.400)	(0.374)	(0.329)	(0.308)	(0.272)	(0.312)	(0.281)	(0.310)
Deal attitude	4.9860**	97.6998**	5.2101***	100.1493**	5.9571***	112.4866***	4.8950**	95.1987**
	(0.012)	(0.023)	(0.006)	(0.019)	(0.001)	(0.010)	(0.014)	(0.026)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Observations	597	597	566	566	533	533	476	476
Number of firms	236	236	225	225	210	210	185	185

PANEL B:

Model(Second stage): $\Delta ROA_{it} = \alpha + \beta_1 * \widehat{tc_{it}} + \beta_2 * \widehat{tc_{it}}^2 + \gamma' Control\ variables_{it} + \mu_i + \varepsilon_{it}$

Dependent Variable: Δ **ROA**	**(1)** **1 YEAR**	**(2)** **2 YEARS**	**(3)** **3 YEARS**	**(4)** **5 YEARS**
Time	0.0345	0.0446*	0.0382*	0.0218
	(0.106)	(0.065)	(0.095)	(0.185)
Time_sq	-0.0016	-0.0022*	-0.0020	-0.0009
	(0.144)	(0.096)	(0.119)	(0.293)
Cash payment	0.0045	-0.0073	-0.0236**	-0.0256***
	(0.665)	(0.565)	(0.017)	(0.002)
Industry difference	-0.0196	0.0051	0.0192	0.0081
	(0.143)	(0.771)	(0.248)	(0.624)
Shareholder protection	-0.0722	-0.0095	0.0137	-0.1112*
	(0.287)	(0.912)	(0.849)	(0.079)
Language difference	-0.0367	-0.0430	-0.0306	-0.0616*
	(0.281)	(0.352)	(0.442)	(0.068)
Geographical difference	0.0048	0.0034	-0.0006	0.0157
	(0.774)	(0.898)	(0.976)	(0.509)
GDP growth	-0.0088**	-0.0091*	-0.0081*	-0.0070
	(0.025)	(0.076)	(0.074)	(0.138)
Total stock growth	0.0400*	0.0261	0.0132	0.0235
	(0.078)	(0.348)	(0.592)	(0.318)
Ownership percentage	-0.0003	-0.0012	-0.0010	-0.0002
	(0.589)	(0.284)	(0.157)	(0.837)
Value of transaction	-0.0111	-0.0154	-0.0110	-0.0036
	(0.231)	(0.109)	(0.189)	(0.613)
Size	-0.0179	-0.0183	-0.0218**	-0.0236**
	(0.115)	(0.111)	(0.042)	(0.027)
Cash flow	-0.0908	-0.0527	-0.0970	-0.0296
	(0.247)	(0.508)	(0.158)	(0.717)
Debt	0.1029**	0.0852	0.1526**	0.1240*

	(0.015)	(0.115)	(0.023)	(0.071)
Tobin's Q	-0.0078	-0.0160	-0.0149*	-0.0063
	(0.396)	(0.143)	(0.098)	(0.381)
Constant	0.1832	0.2690*	0.2264	0.2210
	(0.117)	(0.095)	(0.173)	(0.135)
Firm fixed effect	Y	Y	Y	Y
Observations	1,200	1,122	1,053	932
Number of firms	839	781	730	641
Extremum of time until completion(days)	315	299	282	358
Wald test: Time_sq=0	Not rejected	Marginal	Not rejected	Not rejected
Utest Null	Monotone/U	Monotone/U	Monotone/U	Monotone/U
Utest (P-value)	0.0769	0.05	0.0624	0.159
Utest-implication	Weak inverse-U	Strong Inverse-U	Weak inverse-U	Monotone/U

*P-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$. Rejection of the Wald test at $p < 0.05$, while its marginal rejection is at $p < 0.1$*

Appendix

Definition of Variables

CAR & BHAR	*The one-month and three-month CAR, and the six-month, one-year, and three-year BHAR of the acquirer firm after the deal. Source: WRDS and COMPUSTAT*
Acquirer ROA	*The change in ROA of the acquirer one year, two years, three years, and five years after the deal. ROA is calculated as EBITDA divided by Total Assets. Source: COMPUSTAT*
Acquirer Turnover	*The change in turnover of the acquirer one year, two years, three years, and five years after the deal. Turnover is calculated as Sales divided by Total Assets. Source: COMPUSTAT*
Failure dummy	*A dummy variable which is equal to one if the firm is delisted after the deal by t periods and zero otherwise. Source: WRDS*
Survival Analysis: (Time until Failure)	*The time taken until delisting or acquisition of the acquirer firm. Source: WRDS*
Time until Completion	*The interval between the announcement and effective date of the deal measured in months. Source: SDC database*
Cash Payment	*A dummy variable equal to one if the deal is financed by all or majority cash or other means and zero if financed by all or majority stock. Source: SDC database*
Difference in Industry	*A dummy variable that equals one if the acquirer and target firms belong to different industries and zero if they belong to the same or related industry. Source: SDC database*

Shareholder Protection	*The new anti-self-dealing rights score of the target's country as developed by Djankov et al. (2008) Source: (Djankov et al. 2008)*
Language	*A dummy variable that equals one if acquirer's and target's countries use different languages and zero otherwise. Source: (Stulz and Williamson 2003), World Factbook*
Geographical Region	*A dummy variable that equals one if target's and acquirer's countries are from different continents and zero otherwise. The following country classification is used (America, Asia, Africa, Oceania and Europe): http://www.mapsofworld.com/worldmaps/world-map-with-latitude-and-longitude.html*
GDP Growth	*The annual GDP growth rate of the target countries. Source: World Bank Development Indicators*
Total Stock Traded Growth	*The calculated annual growth of total stock market value of the target countries. Source: World Bank Development Indicators*
Value of the Transaction	*The log of the total value of consideration paid by the acquirer, excluding fees and expenses. Source: SDC database*
Ownership Percentage	*The percentage ownership of the acquirer after the deal. Source: SDC database*
Firm Size	*The log of total assets of the acquirer firm. Source: COMPUSTAT*
Firm Cash flow	*The cash flow of the acquirer firm scaled by its total assets. Source: COMPUSTAT*
Firm Leverage	*The total liabilities of the acquirer firm scaled by its total assets. Source: COMPUSTAT*

Firm valuation	*The Tobin's q of the acquirer firm. Tobin's q is defined as the ratio of total assets plus market capitalization minus common equity minus deferred taxes and investment tax credit to total assets. Source: COMPUSTAT*
Bankruptcy	*A dummy variable equal to one it the target has the flag of bankruptcy before the deal and zero otherwise. Source: SDC database*
Cross border	*A dummy variable equal to one if the deal is cross-border (international) and zero otherwise. Source: SDC database*
Attitude	*An indicator variable equal to one if the attitude to the deal is hostile and zero otherwise. Source: SDC database*
Acquirer advisors	*The number of acquirer advisors. Source: SDC database*
Target advisors	*The number of target advisors. Source: SDC database*

References

Afsharipour, Afra. 2009. Paying to break up: The metamorphosis of reverse termination fees. UC Davis Legal Studies Research Paper.

Ahern, Kenneth R., Daniele Daminelli, and Cesare Fracassi. 2015. Lost in translation? The effect of cultural values on mergers around the world. *Journal of Financial Economics* 117: 165-189.

Ang, James S., and Yingmei Cheng. 2006. Direct evidence on the market-driven acquisition theory. *Journal of Financial Research* 29: 199-216.

Bebchuk, Lucian Arye. 1999. A rent-protection theory of corporate ownership and control (No. w7203). National Bureau of Economic Research.

Berkovitch, Elazar, and M. P. Narayanan. 1990. Competition and the medium of exchange in takeovers. *The Review of Financial Studies* 3: 153-174.

Bhagwat, Vineet, Robert Dam, and Jarrad Harford. 2016. The real effects of uncertainty on merger activity. *The Review of Financial Studies* 29: 3000-3034.

Butler, Frank C., and Peter Sauska. 2014. Mergers and acquisitions: termination fees and acquisition deal completion. *Journal of Managerial Issues* 26: 44-54.

Carapeto, Maria, Scott Moeller, and Anna Faelten. 2009. The good, the bad, and the ugly: A survival guide to M&A in distressed times. Unpublished manuscript.

Carhart, Mark M. 1997. On persistence in mutual fund performance. *The Journal of Finance* 52: 57-82.

Chahine, Salim, Iftekhar Hasan, and Mohamad Mazboudi. 2018. The role of auditors in merger and acquisition completion time. *International Journal of Auditing* 22: 568-582.

Chang, Kiyoung, Yong-Cheol Kim, and Hyeongsop Shim. 2013. Weak firms follow strong firms in hot IPO markets. *Asia-Pacific Journal of Financial Studies* 42: 76-108.

Christensen, Clayton M., Richard Alton, Curtis Rising, and Andrew Waldeck. 2011. The new M&A

playbook. *Harvard Business Review* 89: 48-57.

Dikova, Desislava, Padma Rao Sahib, and Arjen Van Witteloostuijn. 2010. Cross-border acquisition abandonment and completion: The effect of institutional differences and organizational learning in the international business service industry 1981–2001. *Journal of International Business Studies* 41: 223-245.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2008. The law and economics of self-dealing. *Journal of Financial Economics* 88: 430-465.

Easterwood, Cintia M. 1998. Takeovers and incentives for earnings management: an empirical analysis. *Journal of Applied Business Research* 14: 29-48.

Eckbo, B. Espen. 2008. Handbook of empirical corporate finance set (Elsevier).

Fama, Eugene F., and Kenneth R. French. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial economics* 33: 3-56.

Fama, Eugene F., and Kenneth R. French. 2004. New lists: Fundamentals and survival rates. *Journal of Financial Economics* 73: 229-269.

Fuller, Wayne A.. 1977. Some properties of a modification of the limited information estimator. *Econometrica* (pre-1986) 45: 939-953.

Furfine, Craig H., and Richard J. Rosen. 2011. Mergers increase default risk. *Journal of Corporate Finance* 17: 832-849.

Hahn, Jinyong, Jerry Hausman, and Guido Kuersteiner. 2004. Estimation with weak instruments: Accuracy of higher-order bias and MSE approximations. *The Econometrics Journal* 7: 272-306.

Healy, Paul M., Krishna G. Palepu, and Richard S. Ruback. 1992. Does corporate performance improve after mergers? *Journal of Financial Economics* 31: 135-175.

Hunter, William C., and Julapa Jagtiani. 2003. An analysis of advisor choice, fees, and effort in mergers

and acquisitions. *Review of Financial Economics* 12: 65-81.

Jensen, Michael C., and Richard S. Ruback. 1983. The market for corporate control: The scientific evidence. *Journal of Financial Economics* 11: 5-50.

Koerniadi, Hardjo, Chandrasekhar Krishnamurti, and Alireza Tourani-Rad. 2015. Cross-border mergers and acquisitions and default risk. *International Review of Financial Analysis* 42: 336-348.

Kothari, Sagar P., and Jerold B. Warner. 2007. Econometrics of event studies. Handbook of empirical corporate finance (Elsevier), 3-36.

Lind, Jo Thori, and Halvor Mehlum. 2010. With or without U? The appropriate test for a U-shaped relationship. *Oxford Bulletin of Economics and Statistics* 72: 109-118.

Louis, Henock, and Amy X. Sun. 2016. Abnormal accruals and managerial intent: Evidence from the timing of merger announcements and completions. *Contemporary Accounting Research* 33: 1101-1135.

Luypaert, Mathieu, and Wouter De Maeseneire. 2015. Antecedents of time to completion in mergers and acquisitions. *Applied Economics Letters* 22: 299-304.

Moeller, Scott, and Maria Carapeto. 2012. Acquiring Distressed and Bankrupt Concerns. The Handbook of Mergers and Acquisitions, 272-284.

Offenberg, David, and Christo Pirinsky. 2015. How do acquirers choose between mergers and tender offers? *Journal of Financial Economics* 116: 331-348.

Rossi, Stefano, and Paolo F. Volpin. 2004. Cross-country determinants of mergers and acquisitions. *Journal of Financial Economics* 74: 277-304.

Sánchez, Carol, Christina D. Seeber, and Stephen R. Goldberg. 2011. M&A update. *Journal of Corporate Accounting & Finance* 22: 9-13.

Savor, Pavel G., and Qi Lu. 2009. Do stock mergers create value for acquirers? *The Journal of Finance* 64: 1061-1097.

Stulz, Rene M., and Rohan Williamson, 2003. Culture, openness, and finance. *Journal of Financial Economics* 70: 313-349.

Thanos, Ioannis C., and Vassilis M. Papadakis, 2012. The use of accounting-based measures in measuring M&A performance: a review of five decades of research. Advances in mergers and acquisitions (Emerald Group Publishing Limited), 103-120.

Uysal, Vahap B., Simi Kedia, and Venkatesh Panchapagesan, 2008. Geography and acquirer returns. *Journal of Financial Intermediation* 17: 256-275.

Wangerin, Daniel, 2017. M&A due diligence, post-acquisition performance, and financial reporting for business combinations. Working paper, Retrieved from http://ssrn.com/abstract=2118836

Zelner, Bennet A., 2009. Using simulation to interpret results from logit, probit, and other nonlinear models. *Strategic Management Journal* 30: 1335-1348.